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ABSTRACT

This guidebook is designed to assist high schools and 2-year postsecondary institutions in planning, implementing, and operating occupational program articulation efforts. Chapter 1 presents a retrospective of program articulation and a look at program articulation today, including time-shortened programs, advanced skills programs, and other forms of articulation. Chapter 2 provides profiles of 18 articulation study sites (including contact information, purpose, type of articulation, overview, and distinctive features). Chapter 3 takes a close look at 10 articulation principles for practitioners. Examples from the study sites illustrate the principles. Action steps for articulation are listed to help educators apply these principles in their own settings. Chapter 4 examines the basic factors in planning and implementing a successful program and suggests creative ways for avoiding or resolving problems. Chapter 5 examines issues related to but not generally part of secondary-postsecondary articulation, such as sharing of facilities, contracting to deliver courses for another institution, 2-year college/4-year college "2 + 2" arrangements and the like. Chapter 6 summarizes the project findings, draws conclusions, and makes recommendations for future action. Appendices contain a list of the technical panel members, a sample of the interview protocol, samples of articulation agreements, sample curricula for advanced placement and other "2 + 2" programs, and a glossary of terms. (CT)

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Research and Development Series No. 259

AVENUES FOR ARTICULATION
COORDINATING SECONDARY AND POSTSECONDARY PROGRAMS

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FOREWORD

Occupational curriculum coordination has become a serious issue for American high schools and 2-year colleges. Whether articulation serves primarily to shorten the vocational training process by eliminating duplication of course work or to augment the curriculum in order to provide students with advanced technical skills, occupational curriculum coordination across the secondary-postsecondary levels creates opportunities for schools to improve or retain programs and better serve students, employers, and the community as a whole.

This guidebook reveals the critical elements of successful secondary-postsecondary occupational articulation efforts already underway. It also reviews the kinds of problems such programs encounter and offers potential solutions. Finally, it examines some related kinds of arrangements that may help pave the way toward workable secondary-postsecondary curriculum coordination. These contents should make the guidebook valuable to all persons interested in initiating or improving their own articulation efforts—educational policymakers, administrators at the State and local levels, advisory committees, program directors, and occupational program instructors, as well as employers and other interested parties.

The National Center would like to thank its technical panel members for their assistance in focusing the research effort. The distinguished panelists include Dr. Gail H. Henderson, Ohio Department of Education, Columbus; Daniel M. Hull, Center for Occupational Research and Development, Waco, Texas; Dr. Dale Parnell, American Association of Community and Junior Colleges; Dr. Robert P. Sorensen, Wisconsin Board of Vocational, Technical and Adult Education, Madison; and Dr. John Washburn, Illinois State Board of Education, Springfield.

The research project is also indebted to the many articulation program directors, instructors, school and college administrators, and others who shared their information and insights with the project staff during the course of nine sites visits and nine in-depth telephone and mail surveys. These persons are educational trailblazers in many ways. Without their help, the project would not have succeeded.

The project staff would also like to thank the persons who reviewed this book in draft form and contributed to its accuracy and completeness. Official reviewers included Dr. Linda S. Peters, Ferris State College, Big Rapids, Michigan; W. Ed Henderson, The School District of Greenville County and Greenville Technical College, Greenville, South Carolina; Dr. Barbara Kline, of the National Center; and Dr. Frank Pratzner, also of the National Center. Unofficial reviewers also to be thanked include the five technical panel members and the program directors at each site.

The project was directed by Dr. James P. Long of the National Center. Catharine P. Warmbrod, Constance R. Faddis, and Dr. Max Lerner assisted in the research and writing, and Judie Goff assisted with data analysis. Monyeene Elliott and Margaret Barbee provided clerical support. The manuscript was edited by Judy Balogh of the National Center's Editorial Services.

Robert E. Taylor
Executive Director
The National Center for Research
in Vocational Education

EXECUTIVE SUMMARY

Occupational curriculum articulation—the coordination of secondary and postsecondary (2-year) occupational training to eliminate unnecessary duplication of course work and streamline the educational process—is not a new idea. But increasing demands for occupational education to become more responsive to students' and employers' needs, coupled with decreasing enrollments, tightening budgets, and the renewed demand for educational excellence have put a new spotlight on curriculum articulation as a viable answer to many of these concerns.

The Coordination of Secondary and Postsecondary Technical Vocational Education Curriculum project, conducted by the National Center and sponsored by the Office of Vocational and Adult Education, U.S. Department of Education, sought to review the state of the art in occupational program articulation between high schools and 2-year colleges or technical institutes around the Nation. The goals were to determine the kinds of approaches evolving within differing educational environments and to reveal the essential common elements, as well as the barriers and solutions, in the form of a guidebook that could help other secondary and postsecondary leaders create or improve their own articulation efforts.

Project staff investigated 18 secondary-postsecondary programs representing the variety of occupational curriculum articulation efforts around the country. Staff collected data during visits to nine sites (i.e., Bakersfield, California; Cocoa, Florida; Dayton, Ohio; Greenville, South Carolina; Minneapolis, Minnesota; Oklahoma City, Oklahoma; Palatine, Illinois; Phoenix, Arizona; and Williamsport, Pennsylvania) and via in-depth telephone/mail surveys of nine others (i.e., Ann Arbor, Michigan; Bellevue, Washington; Portland, Oregon; Sacramento, California; Sidney, Michigan; St. George, Utah; Trenton, New Jersey; Waco, Texas; and Waukesha, Wisconsin).

Investigation of the programs at the sites revealed two major approaches to secondary-postsecondary occupational articulation training efforts: the time-shortened model and the advanced skills model.

The most common model is the *time-shortened program*, of which the primary purpose is to eliminate unnecessary redundancy in educational experiences in order to grant some type of advanced placement to high school students entering a 2-year college program. As a result, students complete an occupational certificate or associate degree program more quickly than the normal postsecondary program would allow. Time-shortened programs take many forms, depending in large part on whether the articulation responds to a State mandate or to locally expressed needs.

Advanced skills programs also eliminate duplication of training across the secondary-postsecondary levels, but their main purpose is to streamline occupational training for grades 11-14 in order to incorporate into the curriculum more advanced training than a traditional postsecondary occupational program would allow. The intention is to graduate students at a master technician level, mainly for industries and businesses adopting high technology. To achieve this, high schools and 2-year colleges closely coordinate the curricula at both levels.

Advanced skills programs take two main forms. One is the core curriculum (or "tech prep") approach, in which high school vocational students receive a core curriculum in mathematics and science as well as critical literacy and other skills that prepare them for success in a strong, advanced postsecondary technical program. Another advanced skills model—probably the most ambitious of any curriculum articulation effort—is the vocational-technical "2 + 2" program. Many educators currently use the term "2 + 2" indiscriminately to mean any articulation program, but the vocational-technical "2 + 2" program is one that tightly coordinates occupational training for grades 11-14—2 years of high school courses plus 2 years of postsecondary technical courses.

Vocational-technical "2 + 2" programs, which are rare, tend to involve hand-in-glove cooperation of many kinds between secondary and postsecondary institutions. Usually, they develop a new or completely rewritten competency-based curriculum for each technical specialty. They also employ a career ladder approach that enables students leaving the program at the end of grades 12, 13, or 14 to obtain a certificate of competency at the level of completion. Often, the schools share facilities, instructors, and other vital resources, and they have joint advisory committees and a jointly employed articulation program coordinator.

Regardless of which model an articulation effort follows, all of the programs studied had certain essential, common characteristics. Couched in terms of "principles for success," they are as follows:

- Leadership and commitment from the top
- Early faculty involvement
- Relationships based on mutual respect and trust
- Mutual benefits to all partners
- Written articulation agreements
- Open, clear, and frequent communications
- Modest initial goals
- Clearly defined responsibilities
- Competency-based curricula
- Common focus on mutual goals rather than individual turf

Although each articulation program that the project staff examined had a unique structure and unique problems, certain types of problems surfaced again and again across the sites. These included staff reluctance to accept the articulation, institutional turf contests, inadequate internal communications, inadequate external promotion of the articulation, and so forth. Program participants offered many creative prescriptions to resolve these operational problems or, at the very least, to work around them.

In the course of the study, project staff uncovered quite a few cooperative efforts between secondary and postsecondary institutions that do not in themselves constitute occupational curriculum articulation. Most, however, promote good working relationships across levels and could

pave the way for more ambitious mutual efforts, such as curriculum coordination. Such related strategies include sharing facilities, contracting to offer classes for other institutions, combined enrollments, enrichment programs, experiential learning programs, articulation with 4-year colleges, and the like.

Given the range of approaches to occupational curriculum coordination, States or regional high schools and 2-year institutions have many options from which to choose when planning an articulation program. This guidebook reviews some of the major options and offers operational advice and ideas. Although effective articulation requires substantial investments, the rewards—in service to students and employers, in program improvement and retention, in good interinstitutional relationships, and in educational excellence—can far outweigh the costs.

CHAPTER 1

SECONDARY-POSTSECONDARY PROGRAM ARTICULATION

Introduction

High schools, community colleges, and other postsecondary technical institutions all face similar pressures for their occupational education programs. As enrollments among younger students decline, communities are demanding program excellence, better use of financial resources, and more highly trained technicians to meet their accelerating needs.

Program articulation—also called program coordination—addresses these concerns. A joint study (Bushnell 1978) by the American Association of Community and Junior Colleges (AACJC) and the American Vocational Association (AVA) describes program articulation as a planned process linking two or more educational systems within a community to help students make a smooth transition from one level of instruction to another without experiencing delays or loss of credit.

The term currently in vogue for articulation is "2 + 2." Many educators use "2 + 2" indiscriminately to refer to many types of articulation. Its more exact meaning (and the way it is used in this publication) is the articulation of curricula in grades 11-14 to create a strong 4-year occupational curriculum that produces graduates with advanced skills.

What does program articulation mean for secondary and postsecondary schools responsible for delivering quality occupational education? Can such institutions use articulation to improve occupational programs, attract and retain students, reduce program costs, meet employer and student demands, and build closer intersystem partnerships? Do such partnerships exist, and how do they work in different situations? Are there proven, effective practices that other schools can adapt for their own use? This guidebook is designed to answer these questions.

Program Articulation Retrospective

Articulation between secondary and postsecondary programs is not a new idea. Whitlock (1978) has traced such efforts back as far as the 1920s, when southern California implemented a 6-4-4 system and established Pasadena Junior College (later Pasadena City College) for grades 11-14. In 1929, the National Education Association dedicated its Seventh Yearbook entirely to a discussion of articulation at all levels (Opachinch and Linksz 1974). The President's Commission on Higher Education in 1947 "underscored the need to provide easier transition between high school and college" (ibid., p. 1).

In the 1950s, articulation of academic credit became a National focus with the Advanced Placement (AP) Program and the College Level Examination Program (CLEP). AP aims at enabling high school students to take college-level foundation courses while in high school and to receive advanced standing once the students matriculate to a postsecondary institution. The CLEP examinations allow students and adults to "test out of" foundation courses at the postsecondary level.

Though early focus was on academic programs, vocational-technical programs took up the articulation challenge in the late 1960s. For example, New York met with some success in its early efforts to articulate certain business and technical programs between high schools and 2-year colleges (Brick 1967). Similarly, the Oregon State Board of Education (1968) developed an approach and guide to assist its high school districts and community colleges in articulating their occupational programs.

By the mid-1970s, quite a few secondary and postsecondary institutions (e.g., Virginia Polytechnic Institute [see Hoerner and Austin 1978]) had articulation activities underway for their occupational programs—enough to prompt several National studies. The National Advisory Council on Vocational Education (1976) surveyed State Advisory Councils and found "planned articulation between secondary and postsecondary levels of instruction in slightly less than 40% of states responding to the NACVE survey" (p. vi). Bushnell (1978) took a close look at a number of articulation occupational programs, including those at Bellevue, Washington; Williamsport, Pennsylvania; Battle Creek, Michigan; Johnstown, New York; and Milwaukee, Wisconsin.

Bushnell found that "program articulation is viewed by some as simply enlightened self-interest" (ibid., p. 23). Though a number of States encouraged or even mandated articulation via their State plans, articulation was "most successfully . . . achieved where institutions voluntarily cooperate because each stands to benefit" (p. 20).

Today, only a few of the programs at the Bushnell study sites continue to operate; the rest have lost steam for a variety of reasons (e.g., State funding terminated after the planning stage). But the study, jointly sponsored by AACJC and AVA, identified an array of different approaches to articulation and successfully promoted the concept of secondary-postsecondary articulation of occupational programs. Evidence of the growing interest is shown by the increasing attention given the concept in recent reports and papers (e.g., Bottoms 1984; Curry 1983; Friedlander 1980; Galloway and Washburn 1985; Knight 1983; Moore 1984; Parnell 1984; Woelfer 1980), as well as by this current research study.

Program Articulation Today

The National Center's study found quite a few articulation efforts currently underway between high school and 2-year postsecondary occupational training. Although the project did not attempt a comprehensive search for articulation sites, queries gleaned program data from 72 nominated sites in 29 States. Of these sites, only a minority of the articulation programs are operational; most are in an active planning stage with implementation expected to start in the fall of 1985 or 1986. From the candidate sites, nine were selected for site visits and nine for telephone surveys. Figure 1 shows the sites chosen for this study. (Also, see Chapter 2 for in-depth profiles of these sites.)

Every current articulation effort examined has at least one common characteristic: to eliminate, as much as possible, unnecessary duplication of training across the two levels. For example, students who have successfully acquired foundation skills, such as keyboarding or use of a power drill, should not have to waste time and tuition money by repeating that training at the postsecondary level. In meshing the curricula from both levels, educators also look for instructional voids that need to be covered. Via advanced placement and/or credit, students can complete their postsecondary training faster. Some of the articulation efforts, however, go beyond the goal of saving students time and money. Such programs eliminate duplication in order to make room in the curricula to teach more advanced skills than could normally be taught in a traditional program. These two different benefits constitute major categories of secondary-postsecondary vo-tech articulation: (1) time-shortened programs and (2) advanced skills programs.

Sites Visited

Phoenix, AZ
Bakersfield, CA
Cocoa, FL
Palatine, IL
Minneapolis, MN
Dayton, OH
Oklahoma City, OK
Williamsport, PA
Greenville, SC

Sites Telephoned

Sacramento, CA
Ann Arbor, MI
Sidney, MI
Trenton, NJ
Portland, OR
Waco, TX
St. George, UT
Bellevue, WA
Waukesha, WI

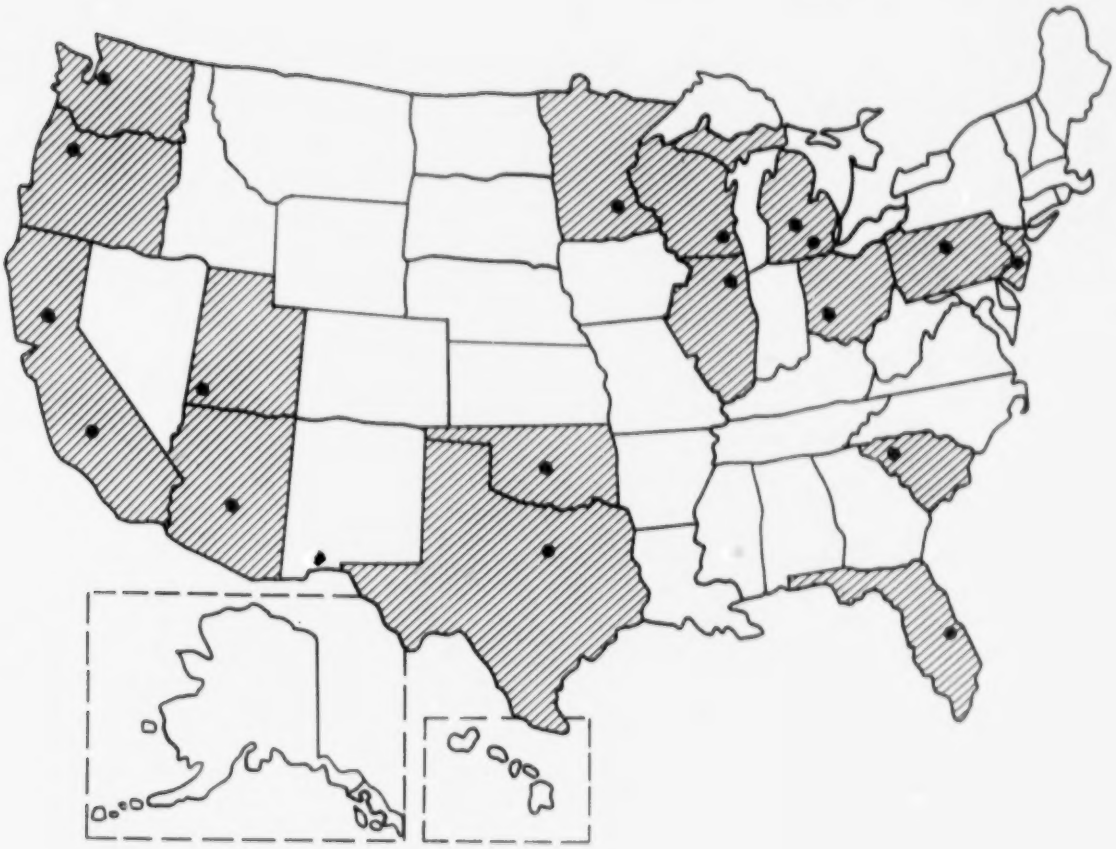

Figure 1. States in which selected sites are located

Time-Shortened Programs

Most of the articulation efforts investigated by the project are designed to facilitate advanced placement in postsecondary programs for students who master foundational skills in high school. Students save some tuition money and complete the postsecondary part of the program faster, but their skill levels do not advance beyond those of a traditional program.

Advanced placement model. These time-shortened programs resulting in advanced placement range from the fairly simple and informal to the very complex with formal contractual agreements. For example, a basic "grassroots" time-shortened effort is underway in Sidney, Michigan, between Montcalm Community College and several local high schools and an area vocational center. College instructors meet with their secondary counterparts to review course syllabuses. They then agree on which high school courses are more or less equivalent to introductory college courses. Matriculating students receive college credit via a written recommendation from their high school instructors.

A more complex time-shortened program is ready to go at Palatine, Illinois. There, three local high school districts and William Rainey Harper Community College are spearheading an articulation effort they call a Regional Vocational Education System (RVS). Planning has involved faculty and administrators from all of the institutions, local employers, and the State board of education, as well as consultants hired to conduct needs assessments and a feasibility study. The articulation has an administrative structure with a full-time program manager. Program planning committees coordinate existing curriculum components at the participating institutions and integrate them into jointly planned area programs.

The RVS at Palatine shares facilities and equipment to reduce costs and maintain or expand training opportunities for students. Inservice workshops on articulation concepts and procedures are a planned component. Also, because the RVS is on the leading edge of Illinois' articulation policy (due to become mandatory in 1988), the program receives most of its planning monies from the State; however, it must also cope with evolving State guidelines. Formal written agreements bind the participating institutions.

One of the most ambitious and successful types of time-shortened programs is the competency-based secondary-postsecondary program. Occupational curricula that are competency-based lend themselves readily to training any students—secondary, postsecondary, or adult—regardless of age. With this in mind, some articulation efforts respond to declining enrollments and fiscal pressures by training high school and postsecondary students with the same curricula (and often together in the same classes). Some of these programs share faculty and equipment; others operate at independent facilities or institutions (e.g., Hennepin Technical Centers) that serve both secondary and postsecondary students.

Most time-shortened programs are not competency based, however; rather, they are course based. That is, entire courses are articulated, based on coordinated syllabuses or task lists. Few time-shortened programs significantly modify existing curricula at either level.

Time-shortened programs have many advantages besides saving students time and money. The cooperating institutions themselves often save money by sharing facilities, equipment, and even faculty. Some schools use the articulation effort as an opportunity to retain or improve existing training programs. Two-year colleges and technical institutes claim that articulation tends to attract more and better high school graduates to the postsecondary programs. High schools often find that articulation helps them provide broader training opportunities for their students. Finally,

by making postsecondary training programs faster and more attractive to students, articulation can help keep future technicians from seeking training—and usually employment—outside the local area.

Advanced Skills Programs

Advanced skills programs also aim at avoiding duplication of training, but the purpose is not to speed students through the curricula more efficiently. Rather, advanced skills programs streamline fundamentals in order to make room in the curricula to teach more advanced skills than students would normally get in a traditional occupational program. Most of these programs have a high-technology emphasis, deliver more concentrated and more advanced content, and graduate students at a "master technician" level. A misnomer that is often applied to all advanced skills programs (and many time-shortened programs as well) is "2 + 2," even though many programs do not involve a structured learning sequence from grade 11 through grade 14.[1]

The project found two main types of advanced skills programs: (1) core curriculum (or "pre-tech") programs and (2) true vocational technical "2 + 2" programs in which the entire occupational training curriculum begins in grade 11 and terminates at the end of grade 14.

Core curriculum model. The main purpose of core curriculum or "pre-tech" programs is to produce better prepared high school graduates for entry into postsecondary technical training programs. Core curriculum programs give secondary students a broad basic background in technology—a strong "core" of concepts and skills—but do not restrict students to making an occupational choice in their junior year. Many such programs include agreements that enable matriculating students to bypass postsecondary introductory courses and take more advanced courses than the 2-year training program would allow. Although the preparation is broader, high school students still receive sufficient specific skill training for entry-level employment.

An example of an articulated core curriculum program is Oklahoma City's articulation effort, which is built on the Principles of Technology "tech-prep" curriculum developed by the Center for Occupational Research and Development (CORD) and the Agency for Instructional Technology. The articulation responds to community needs for more and better trained technicians for high-technology industries in the Oklahoma City area. It also is part of a local economic development effort to attract new high-tech industries to the city.

Appendix E contains a sample curriculum for a pre-tech "2 + 2" program.

Vocational technical "2 + 2" model. True vocational technical "2 + 2" programs focus strongly on developing advanced skills for high-technology occupations. As Bottoms (1984) explains,

> Advanced-level technical and skilled workers need a broad base of knowledge that cannot be developed in two years at either the secondary or postsecondary level. A four-year program is needed to develop their ability to learn in the specific occupational field, and to link this education closely with planned experiences in the employment setting. (pp. 8-9)

Starting in grade 11, vocational technical "2 + 2" programs arrange the study of mathematics, science, communications, technology, and specific technical skills so as to avoid duplication and

[1] The term was borrowed from the original "2 + 2" programs linking college preparatory programs (grades 13-14) to baccalaureate degree programs.

reach a "master technician" level of competence in a step-by-step progression of coordinated curricula by the end of grade 14.

To achieve this ambitious outcome, vocational technical "2 + 2" programs must blend the resources of both the secondary and postsecondary institutions. This may involve creating a jointly operated training facility; writing new, comprehensive, competency-based curricula for all 4 years; building strong, close working relationships among participating administrators and faculty; sharing instructors; maintaining exceptionally close relationships with local employers; investing substantial planning time and funding; and creating and managing complex formal operational and funding structures.

Perhaps the premiere example of a true vocational technical "2 + 2" program is in Bakersfield, California, among Bakersfield College, nine local high schools within the Kern High School District, and the Kern County Regional Occupational Program (ROP). The articulation responds to the expressed needs of local employers for better trained technician-level employees, specifically to work in the highly mechanized agriculture industry that is central to the county's economy. Bakersfield's "2 + 2" offers a career ladder agriculture training program in the 11th-14th grade level. The program culminates in a 2-year associate degree whose strong general education emphasis should facilitate potential transfer to a 4-year college or university.

Advanced skills programs often involve significant curriculum revisions. The programs benefit from preexisting working relationships across the participating institutions. Because such programs specifically serve local high-technology training needs, it is important to conduct local needs assessments, predetermine potential enrollments, and find funding for the program up front. A joint advisory board and program coordinator are also important to the process.

Other Forms of Articulation

Time-shortened and advanced skills articulation programs serve what is called *vertical articulation*, which helps students move up to the next level (secondary to postsecondary) in an educational program. Other forms of articulation also exist, but are not addressed directly by this project. They include the following:

- **Horizontal articulation**—when students move from one campus or program to another of the same type

- **Reverse articulation**—when students enrolled in an institution normally considered to be at an advanced level return to an institution of education they usually would be expected to have graduated from earlier (Maricopa Community College 1985, n.p.)

Many types of cooperative activities exist between educational institutions that do not involve a significant amount of secondary-postsecondary program coordination, yet relate to it and seem to lead toward it. These include contracting to offer classes to other institutions, 2-year college or technical institute articulation with 4-year colleges (the original form of "2 + 2"), sharing of facilities, enrichment programs, and dual enrollment programs. These activities usually improve communications between cooperating institutions and help them better serve their students and community.

Overview of the Guidebook

The remainder of this document will assist high schools and 2-year postsecondary institutions in planning, implementing, and operating occupational program articulation efforts.

Chapter 2 provides profiles of the articulation study sites. Included are contact information, purpose, type of articulation, overview, and distinctive features.

Chapter 3 takes a close look at articulation principles for practitioners—the elements or practices essential to any successful articulation program. Examples from the study sites illustrate the principles. Action steps for articulation are listed to help educators apply these principles in their own settings.

Chapter 4 examines the basic factors in planning and implementing a successful program, including potential problems or barriers an articulation program may face and suggestions for how to avoid, resolve, or work around them.

Chapter 5 examines issues related to but not generally part of secondary-postsecondary articulation, such as sharing of facilities, contracting to deliver courses for another institution, 2-year college/4-year college "2 + 2," and the like.

Chapter 6 summarizes the project findings and draws conclusions about "what is going on out there" with secondary-postsecondary program articulation. It also suggests where such efforts are leading and makes relevant recommendations for future action.

Appendices contain a list of the technical panel members, a sample of the interview protocol, samples of articulation agreements, sample curricula for advanced placement and other "2 + 2" programs, and a glossary of terms as used in this document.

CHAPTER 2

ARTICULATION SITES: WHAT'S WORKING IN THE FIELD

To investigate occupational curriculum efforts between secondary and postsecondary institutions, National Center project staff selected nine sites for on-site visits and nine sites for telephone surveys. Criteria for site selection addressed the following concerns:

- Selected sites should represent different parts of the country.
- Selected sites should represent differing kinds of service areas (e.g., primarily urban, suburban, or rural).
- Articulated programs should address occupational training across the secondary and postsecondary levels and result in an associate degree or certificate equivalent to completion of grade 13 or grade 14.
- The articulation activities should have advanced to a stage where benefits have begun to accrue (e.g., improved faculty cooperation across levels, program improvement via curriculum modifications, cost reductions through shared facilities/equipment, and so forth).
- The coordinated curriculum should negate duplication of learning experiences.
- The articulated programs should represent a wide range of content areas covering business and office technologies; engineering, industrial, and scientific technologies; and health and public service technologies.
- Articulation program strategies should display diversity of impetus and approach.

See appendix B for a sample of the interview protocol used during the on-site visits. A modified version of these questions was used for the telephone surveys. The information gathered during the project investigation addressed the following array of topics:

- Cost/benefits of articulation
- Critical elements for program success
- Barriers or problems encountered
- Purpose/impetus for establishing the articulation
- History and structure of the planning and implementation efforts
- Sharing of resources, funding arrangements

- Faculty and employer involvement
- Scope of program (e.g., specific curricula coordinated, number of students involved, and so forth)
- Program curriculum characteristics (e.g., competency-based, open-entry/open-exit, career ladders, and so forth)
- Program processes (e.g., evaluation/revision system, coordinating counseling services, provisions for articulated credit, and so forth)
- State involvement
- Community information (e.g., type of service area, local population, local economic picture, major industries, and so forth)

Individual site profiles are presented in the following pages. Included are contact persons, purpose of the articulation, type of articulation, overview, and distinguishing features. Sites are listed alphabetically according to the State.

Phoenix, Arizona

Articulating Institutions:

7 campuses of Maricopa County Community College and 17 high school districts

Contact Persons:

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Coordinator
High School Articulation
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(602) 267-4604

Program Description:

Purpose. This time-shortened articulation is structured so that students can progress without duplication of time, effort, or expense to themselves or the taxpayers. By using buildings, equipment, and staff to the fullest advantage, the articulation enables the high schools to offer college-level courses and the college to receive better qualified applicants.

Type of articulation. Six different types of articulation are taking place. Through contracting, the high schools purchase education and learning from the college that would otherwise not be available to secondary students. Course credit is a process whereby high school students may earn college credit for mastery of competencies equivalent to a college course. Joint program development occurs when high schools and college administrators cooperatively develop an occupational program. Resource coordination occurs when high schools and colleges share faculties, facilities, and equipment. High school graduates may also be granted college credit for having valid occupational credentials.

Overview. The Maricopa County Community College district is large and complex (7—soon to be 9—campuses) and offers credit courses for 100,000 students a year. It also serves 17 high school districts, several of which have more than 1 high school. Partly because of recent State legislation, the college initiated articulation with the assistance of a small grant and employed a full-time coordinator to lead the project.

Most of the articulation agreements between the college and the individual high school districts are relatively new and few students have taken advantage of the programs to date. Numbers are expected to increase as relationships become more defined and as high school districts learn how to access the State funds that will be available.

Distinctive features. The most distinctive aspect of Maricopa County high school and college articulation is the process used. Articulation agreements are launched when a college occupational dean and high school principal decide that their programs will benefit from articulation. Details are worked out during a joint meeting of the senior faculty from each institution Agreements are consummated with documents that are produced by district support staff and signed by everyone involved. The result is a high degree of trust and cooperation that makes it possible for students to transfer between programs with a minimum of paperwork.

Bakersfield, California

Articulating Institutions:

Bakersfield College (Kern Community College District) and the Kern High School District

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Program Description:

Purpose. Both the high school and college districts recognized the need for a larger and improved agricultural teaching facility (land and building). Surveys of agricultural employers revealed the need for stronger agricultural training programs. The educators saw that these improvements would attract more and better students and also would provide agricultural employers with better prepared employees.

Type of articulation. Bakersfield has one of the few vocational technical "2 + 2" articulation systems in the country. The collaborators have developed a 4-year agricultural program with 2 years in high school and 2 years at Bakersfield College. Students who complete the program graduate at a master technican level with more advanced skills than they would receive in a traditional (or even time-shortened) program.

Overview. The articulation offers a career-ladder agricultural training program in grades 11-14 in 6 areas (agricultural business, animal science, crop science, forestry, agricultural mechanics, and ornamental horticulture). Each area has specific, industry-defined job competencies to be achieved by the end of each year of training. Certificates of completion are offered at the end of each year, and program completers receive an associate degree in science. The high schools, Regional Occupational Program (ROP), and the college share the agricultural training facility, composed of 80 acres of farm land and a building containing classrooms and laboratories. They also share agricultural facilities and faculty at the college and participating high schools. In addition to the technical courses, the comprehensive curricula are strong in English, mathematics, humanities, and Spanish.

Distinctive features. The jointly developed "2 + 2" agricultural program represents unusual sharing, leadership, and commitment, as exemplified in the many changes required at both educational levels. One Agricultural Advisory Committee serves both the high schools and the college. The agricultural industry is the largest employer in Kern County, and employers have taken a very active role in creating the joint facility and program as well as contributing substantial resources to the undertaking.

Sacramento, California

Articulating Institutions:

American River College (Los Rios Community College District), Sacramento Unified School District, Sacramento County ROP (Regional Occupational Program), Marconi Technical High School (San Juan School District), Bella Vista High School (San Juan School District), Foothill High School (Grant Union District), Grant High School (Grant Union District), and River City High School (Washington Unified School District)

Contact Persons:

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Program Description:

Purpose. The collaborators planned to meet the employment needs of new electronics companies moving into the area. By working together and sharing curricula and facilities, the schools will expand their capacity and graduate more and better workers.

Type of articulation. This time-shortened articulation focuses primarily on the electronics area. By teaching the beginning courses in the high schools, the college labs are freed up for advanced courses. Advanced college credit for this high school training experience is granted following proficiency testing by the college.

Overview. When the electronics industry began to flow into the Sacramento area, American River College had more students in electronics than it could handle. The college articulated its electronics curriculum with those of the area high schools and helped them build stronger programs. The labs that the college usually used for the beginning electronics courses were thereby freed (since many students now received these competencies in the high schools) and could accommodate more advanced college courses.

The college uses high school teachers as part-time faculty. This also helps upgrade the secondary teachers. The college gives a 4-hour exam in electronics twice a year for students from articulating high schools who enroll in the college electronics program. Credit is then held in escrow until a student completes 12 units at American River College.

The Regional Occupation Program (ROP) Steering Committee, which meets monthly, served as the articulation's planning and communications entity. It is composed of the local directors of vocational technical education. Also, the institutions' vo-tech programs maintain joint advisory committees. There is no written agreement, just an understanding that is recommitted as new staff become involved. From electronics, the articulation has expanded to include welding, drafting, and automotive training.

Distinctive features. The sharing of resources and expertise to meet the technical personnel needs of the growing electronics industry is a distinguishing element of articulation in Sacramento. By articulating on a community-wide basis, the collaborators have increased enrollments and expanded the electronics program at both levels without investing in additional facilities and equipment. In the process, they have also improved the programs.

Cocoa, Florida

Articulating Institutions:

Brevard Community College and 10 secondary schools in the County District

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Brevard Community College
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Cocoa, FL 32922
(305) 632-1111

Program Description:

Purpose. The collaborators first became interested in articulation 6-7 years ago in response to the need (1) to help students avoid having to repeat subject-matter areas they already knew and (2) to meet a State mandate to develop an articulation process.

Type of articulation. The articulation involves time-shortened articulation programs resulting in associate degrees in drafting, secretarial sciences, or electronics, as well as certificates in auto mechanics or data processing.

Overview. The competency-based occupational programs at Brevard's 3 campuses annually serve 10,000 full-time students. The articulation process was developed with the assistance of two grants from the State. With the help of a half-time consultant, agreements were worked out at meetings with faculty, advisory committee members, and school administrators. Secondary teachers determine the competency level for each student interested in enrolling in articulated programs at the college. The college credits granted are held in escrow until the student has satisfactorily completed one course on the campus in a related field.

Distinctive features. In addition to the time-shortened articulation model, Brevard has a strong commitment to experiential learning and is a leader in granting credit for life experiences. The college also has strong programs in combined enrollments and enrichment. High school sophomores can take college classes during the summer months to get an early start on college. During their junior and senior years, these students can enroll in both day and evening classes at the college for both secondary and postsecondary credit. Brevard also serves as the county's designated area adult vocational school.

Palatine, Illinois

Articulating Institutions:

High School District 211, High School District 214, Community Consolidated School District 220, and William Rainey Harper Community College (Community College District 512)

Contact Persons:

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Program Description:

Purpose. The articulation effort—the Northwest Suburban Career Cooperative, a Regional Vocational Education System (RVS)—responds to the State's "Education for Employment" policy, which calls for all high school districts in Illinois to become regionally articulated among themselves and with their community colleges by 1988. The four RVS collaborators decided to "get a head start" on the articulation requirement and have become trailblazers for the State articulation model.

Type of articulation. RVS is developing time-shortened articulated programs that will enable high school students to take college courses for high school credit. Following graduation, students may then test into RVS programs at Harper College and receive advanced placement.

Overview. Beginning in the fall of 1985, RVS offered articulated training programs in the following areas: Clerk/Typist; Secretarial; Word/Information Processor; Horticulture; Heating, Air-Conditioning, & Refrigeration; Finance & Credit; Computer Graphics; Medical Office Assistant; Nursing; Nursing Assistant; and Cosmetology. In the following year (fall 1986), RVS will also offer articulated programs in Automotive Technology, Auto Body Technology, Fashion Merchandising and Design, Graphic Communication, Human Services, Restaurant and Hospitality Management, and Electronics. RVS plans a gradual, "evolutionary" switch from current task-list-based course coordination to competency-based curricula. Postsecondary program completers earn certificates or associate degrees, as appropriate. The RVS shares facilities and equipment, as necessary, and allows both vertical and horizontal articulation.

Distinctive features. In spearheading the State's articulation model, RVS often must "invent the wheel." Excellent leadership, open and frequent communications with all staff, equal partnership among participants, a "win-win" mentality, and the adoption of a gradual approach to phasing in competency-based instruction have resulted in an ambitious, enthusiastically supported articulation effort.

Ann Arbor, Michigan

Articulating Institutions:

Washtenaw Community College and 11 public school districts

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Saline, MI 48176
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Program Description:

Purpose. The impetus for articulation came from local advisory committees and instructors. They wanted to coordinate the curricula to eliminate any duplication, to cover any omissions, and to smooth the transition to the community college. The purpose was to create a comprehensive delivery system.

Type of articulation. This is a well-organized, time-shortened articulation program. College credit is granted to articulating students for identified task competencies achieved in secondary programs. The curricula provide a competency-based approach to education.

Overview. The participating high school teachers maintain a competency record for each student that certifies areas and levels of task achievement. When the student requests that this record be forwarded to Washtenaw Community College, the college awards advanced placement credit in articulated programs for the certified competencies. In order for credit to be granted, the student must enroll at the college within 24 months following high school graduation. For equivalency credits, there are no tests and no fees; however, the student must complete six Washtenaw Community College credits before articulated credits will be recorded on the transcript. The maximum number of articulated credits awarded is 9 credit hours for a certificate program and 18 credit hours for an associate degree program.

The districts jointly hired an articulation coordinator to coordinate the programs and work with teachers in identifying tasks, competencies, and standards. The coordinator prepared the curriculum guides for the articulated training programs.

Distinctive features. The smooth transition from high school to community college distinguishes this articulation system, as exemplified by the competency-based curricula and the acceptance of competencies for credit without testing by the college. The articulation program encompasses a broad range of technologies and links with most school districts in the college's service area.

Sidney, Michigan

Articulating Institutions:

Montcalm Community College, Montcalm Area Career Center (secondary), Vestaburg High School, Lakeview High School, Greenville High School, and soon to include Alma High School

Contact Persons:

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Program Description:

Purpose. Montcalm Community College initiated the articulation in order to improve existing occupational programs, attract more students, and better meet local employers' needs. Students too often leave the area for postsecondary training and do not return for employment. The high schools expect articulation to attract more students to vocational courses and to motivate performance.

Type of articulation. The Sidney effort enables high school vocational students with appropriate grades and the recommendation of their high school instructors to receive advanced credit for certain introductory college courses upon entry at Montcalm Community College in articulated program areas. The result is time-shortened occupational associate degree programs.

Overview. The Sidney articulation offers advanced placement in postsecondary automotive, machine trades, electronics, and welding programs (drafting is under consideration). The program allows promising high school students to earn advanced college credit with no testing and at no cost.

Distinctive features. A true "grassroots" effort, the Sidney articulation began with a one-man (Mr. Jesse Fox) campaign of conversations with high school principals and faculty, then expanded to bilevel faculty meetings, and resulted in signed articulation agreements. High school and college instructors met to compare course syllabuses and agree on what high school vocational courses are equivalent to college-level introductory courses. The college changed its general scheduling to facilitate articulation. Also, fundamentals were extracted from existing college courses and clustered in new introductory courses that could be bypassed by advanced credit. The program operates without State support and costs virtually nothing.

Minneapolis, Minnesota

Articulating Institutions:

Hennepin Technical Centers and 13 high school districts in the western suburbs of Minneapolis

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Program Description:

Purpose. Local high school districts created Hennepin Technical Centers (HTC) in 1970 after deciding they could not independently serve their students' vocational training needs. Seeing that they needed a larger base than merely pooling resources, they sought State legislation to create HTC (Intermediate School District 287) with its own levying power, its own curricula, and its own school board. HTC's programs were extended in 1972 to train postsecondary and adult students. Articulation essentially takes place internally within HTC.

Type of articulation. The Minneapolis articulation effort results in time-shortened programs for those who begin the HTC training during high school and complete it as HTC postsecondary students.

Overview. HTC offers open-entry/open-exit, individualized, competency-based occupational training for 11th- and 12th-grade students from participating districts. The same curricula are used for postsecondary and adult students. Training includes nearly 100 programs clustered as follows: Food Service Occupations, Building Trades, Business Occupations, Machine Trades Occupations, Health Occupations, Transportation, Graphic Communications, Technical Occupations, and Natural Resources and Environmental Occupations. HTC does not award associate degrees; programs result in a certificate of mastery listing specific competencies acquired. HTC's two campuses also provide special needs and enrichment programs for participating districts.

Distinctive features. HTC is the only non-degree-awarding site in the current study and the only intermediate school district found involved in articulation. Because HTC offers the same curricula to both secondary and postsecondary students within the institution, most articulation arrangements are handled internally.

Trenton, New Jersey

Articulating Institutions:

Mercer County Community College and Mercer County Area Vocational Technical Schools (secondary)

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Mercer County Area Vocational Technical School System
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Trenton, NJ 08690
(609) 586-5144

Program Description:

Purpose. This time-shortened articulation effort is new, but the collaborators plan eventually to develop a career ladder concept. Because students can save time and money by not having to repeat articulated courses, the collaborators hope the articulation will help recruit more students in the vocational training programs.

Type of articulation. Efforts in articulation include advanced placement in Secretarial, Nursing, Medical Assisting, and Commercial Arts training programs.

Overview. Teachers from both levels are meeting to determine which secondary competencies will transfer to the postsecondary programs. They have agreed to give postsecondary credit for approximately 9 credit hours, with the secondary teachers responsible for ensuring the high school graduates' competency levels. The program seems to be working well, except for some problems in the Nursing program. The articulation is in its first year of operation, with 20-25 students in the articulated programs.

Distinctive factors. In addition to these new initiatives for advanced placement, the collaborators jointly sponsor training programs in Refrigeration, Automotive Technology, and Solar Energy for adult students. They annually enroll approximately 325 adults in these combined certificate programs. The secondary vocational schools teach the laboratory subjects, and the college teaches the general education components. Approximately 75 percent of the students stop their formal education and seek employment after completing the certificate program. The other 25 percent go on to complete their associate degree. The adult training programs use articulated curricula, jointly developed with the help of an advisory committee.

Dayton, Ohio

Articulating Institutions:

Sinclair Community College, Dayton Public Schools, Montgomery County Joint Vocational School, and Upper Valley Joint Vocational School

Contact Persons:

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Dayton City Schools
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(or)

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Montgomery County Joint Vocational School
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Eleanor S. Young
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Sinclair Community College
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Dayton, OH 45402
(513) 226-2789

Program Description:

Purpose. The purpose of this articulation plan is to deliver better service to the entire community and to assist students to avoid repeating learning tasks they have already mastered.

Type of articulation. Time-shortened articulation programs, enrichment, and experiential learning make up the articulation efforts.

Overview. Articulation agreements have been in place for 8 years to permit vocational program graduates of Dayton Public Schools to receive credit for 2 or 3 courses if the students enroll at the community college. Similar agreements have also been signed between the college and two joint vocational schools in the Dayton area, as well as other professional organizations such as the American Institute of Banking, Dayton Power and Light, local hospitals, the Savings and Loan Institute, and NCR. In addition, the Sinclair program for experiential learning provides the opportunity to receive college credit for prior nonclassroom learning experiences for any student. The college also has a widespread reputation for its enrichment program for high school students.

Distinctive features. Although the numbers of high school vocational graduates applying for and receiving college credit via the articulation agreements have been small, the college delivers outstanding enrichment and experiential learning programs. The number of vocational high school graduates taking advantage of the time-shortened articulation program is expected to increase in the near future.

Oklahoma City, Oklahoma

Articulating Institutions:

Oklahoma City Community College, Oklahoma City Public Schools, and Francis Tuttle Vocational-Technical Center

Contact Persons:

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Francis Tuttle Vo-Tech Center
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Donald Newport
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Oklahoma City, OK 73159
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Program Description:

Purpose. The three educational entities involved in the articulation effort collaborated to strengthen educational programs, reduce duplication, and provide programs that would develop the technical manpower and further economic development in Oklahoma City. Articulation would also enable the institutions with postsecondary programs to attract better prepared students.

Type of articulation. This is an advanced skills articulation program with a strong tech-prep core of courses in grades 11 and 12 that provides a solid base of science, math, and technology basics upon which the postsecondary technical programs can build, leading to a certificate or an associate degree.

Overview. The Oklahoma City articulation is a good model of the core curriculum approach to articulation. The three educational organizations used an outside consultant, the Center for Occupational Research and Development (CORD), to assist in designing the articulation and to develop a core curriculum for advanced technical programs. CORD developed the Principles of Technology I and II curricula (also called Physics I and II) to provide the strong basic foundation in grades 11 and 12 that enables the students to move with advanced competencies into technical programs at the postsecondary level. These core curricula link up with seven new competency-based technical programs at Oklahoma City Community College and the Francis Tuttle Vo-Tech Center. These two institutions have coordinated their programs in that they have agreed which of the institutions will offer which technical articulated programs in order to avoid duplication of effort. The college offers articulated training for Medical Equipment Technician, Industrial Plant Technician, and Computer-Aided Design (CAD) Technician programs. Francis Tuttle Vo-Tech Center offers training for Instrument Control Technician, Automated Manufacturing Technician, Computer Technician, and Electronic/Telecommunication Technician programs.

Distinctive features. Three local educational institutions (districts) under three different State boards have established an articulation system founded on a rigorous but practical secondary core curriculum for technologies. All three institutions provide competency-based education. Competency profiles are established for each student in each course and are part of the student's permanent record.

Portland, Oregon

Articulating Institutions:

Portland Community College and Portland Public School District

Contact Persons:

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Special Project Coordinator
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Portland, OR 97227
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Program Description:

Purpose. The articulation is intended to enable better preparation of students for employment and/or additional education, to increase enrollment in vocational education, and to reduce the time and tuition students need to complete college.

Type of articulation. Articulation provides for a time-shortened postsecondary program with advanced standing granted upon certification of the student's competencies by a qualified secondary instructor.

Overview. The college grants advanced placement credits in its competency-based Drafting, Office Administration, and Business and Business Administration programs to secondary students who have obtained a B or better grade, who can pass the college test, and who are recommended by their high school teacher. Advanced college credit for skills in Graphic Communication depends on a review of the student's portfolio.

Distinctive features. This articulation program is just starting, but collaborators hope to expand it to include Auto Mechanics and Electronics. Portland Community College has also developed an upper-level "2 + 2" program with the University of Portland and the Oregon Graduate Center. Outstanding high school students, especially minorities and women interested in engineering, can participate in a fully articulated honors program in electrical engineering and computer sciences leading to a master's degree.

Williamsport, Pennsylvania

Articulating Institutions:

Williamsport Area Community College and 20 secondary school systems

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William J. Martin
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Program Description:

Purpose. The articulation program is designed to afford students the opportunity to articulate the skills and knowledge attained at their secondary schools to the college for up to 30 college credits. The program shortens the period of time required and the cost for students to complete an associate degree or certificate prior to entering the job market.

Type of articulation. The articulation agreement allows secondary students to earn dual credit toward their high school diploma and an associate degree or certificate. The result is a time-shortened program.

Overview. Williamsport Area Community College is the only community college in Pennsylvania that sponsors vocational programs for secondary students. The college currently offers 16 secondary vocational trade and industrial training programs as well as some agricultural programs. In these areas, the college offers advanced placement, based on a statement from the secondary vocational teachers, for any graduate of any vocational secondary program in the State. Applicants to the college with experience in these secondary vocational programs have their secondary instructor complete a competency checklist profile that details the student's secondary experiences. This profile is evaluated by college faculty, and credits are awarded to the student based upon a comparison between the competency profile and the course content at the postsecondary level. In this way, Williamsport is able to offer articulation to graduates of any vocational program in the State of Pennsylvania. Since the college does not offer secondary programs in business and computer technology, that division of the college grants advanced placement credit only on the basis of skill testing.

Distinctive features. Because the college serves both secondary and postsecondary vocational students, it has developed a very extensive time-shortened articulation program. On the average, 200 students annually are accepted with some type of advanced placement. In the near future, the college and local secondary schools hope to collaborate in developing a new high-tech training center.

Greenville, South Carolina

Articulating Institutions:

Greenville Technical College and The School District of Greenville County

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Program Description:

Purpose. Educators at both levels wanted to eliminate duplication and delay in students' passage from secondary to postsecondary programs and to encourage students to continue their education. They saw articulation also as a more efficient use of taxpayers' money and an effective way to improve occupational programs.

Type of articulation. Articulation in Greenville is a time-shortened program that provides for advanced placement through testing. In addition to vertical articulation between the school district and the college, horizontal articulation among the high school career centers has produced improved coordinated curricula with common objectives and standards. All of the newly developed secondary articulated curricula are performance based.

Overview. The School District of Greenville County and Greenville Technical College jointly employ the coordinator of the articulation program. The coordinator's responsibilities are to coordinate curriculum articulation between the secondary and postsecondary institutions and to develop performance-based instructional guides for each secondary vocational program. A joint teacher task force in each occupational program solved curriculum articulation problems and provided the information to the coordinator for the development of the competency-based instructional guides.

A broad range of vocational technical curricula are articulated. When students from articulated programs enroll at Greenville Technical College, they receive college course credit at no cost if they pass the proficiency test for the designated course. Written articulation agreements are considered important and exist at three levels. The first is a State-level Memorandum of Understanding between the State Board for Technical Comprehensive Education and the Office of Vocational Education in the State Department of Education. At the local level, there is a written articulation agreement between Greenville Technical College and The School District of Greenville County. In addition, agreements at the instructional level are signed by department curriculum task force members.

Distinctive features. The commitment of the collaborators to the articulation is exemplified in the resources applied to the effort. These include the continued joint funding of the coordinator of the articulation program, the extensive released time for teachers to work on revising curricula, and the support services provided. The coordinator has developed a very detailed and comprehensive guide for articulation and for developing articulated performance-based curricula.

Waco, Texas

Articulating Institutions:

Texas State Technical Institute (TSTI)—a TSTI System Office in Waco and 4 campuses in Amarillo, Harlingen, Sweetwater, and Waco—articulating with over 500 school districts in Texas

Contact Persons:

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Program Description:

Purpose. Waco's articulation thrust responds to Texas H.B. 72, which requires independent school districts to have written articulation agreements with colleges statewide. The articulation also intends to attract more students to Texas State Technical Institute (TSTI) by eliminating any course duplication that would discourage their attendance.

Type of articulation. This time-shortened effort exists to establish formal articulation of students from all high schools of Texas with related programs at TSTI. It provides opportunities for advanced placement for students in articulated technologies.

Overview. The 4 campuses of TSTI serve the whole State, and as of this writing they have garnered over 500 general institutional signed agreements and over 300 program-specific signed agreements, with more coming. TSTI has 75 vo-tech programs that can be articulated. The articulation focuses on common competencies in the high school program and the TSTI curricula. The articulation system takes advantage of State-legislated competency-based curricula at the secondary level and the flexibility of TSTI to individualize instruction while meeting industry-specified job requirements at the associate degree level. TSTI has assigned an articulation coordinator for each campus and provides released time to one person in each articulated program to work on curricula. Written agreements are established at both the institutional and program levels.

Distinctive features. The challenge for this articulation is in its magnitude, because TSTI serves all of Texas and is required to articulate with all high schools. This has also provided a good opportunity for TSTI, however, for it allows the institution access to the high schools, where it can create awareness of the opportunities TSTI provides.

St. George, Utah

Articulating Institutions:

Washington County School District; Dixie College (community college)

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St. George, UT 84778
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Program Description:

Purpose. In 1977, Washington County School District and Dixie College realized each did not have enough funds to do needed curriculum revisions, build new facilities, or acquire necessary new equipment. The two institutions articulated programs to avoid duplication of costs and to maintain/expand occupational training opportunities for students at both levels who would otherwise have to leave this rural county for training.

Type of articulation. The articulation in Washington County is a time-shortened program that allows both horizontal and vertical articulation and allows high school students to take college-level courses that count both toward high school graduation credit and advanced placement credit at the community college.

Overview. The Washington County-Dixie College articulation offers training in over 30 occupational areas, from vocational agriculture to welding. Dual credit (both high school and college) is given for high school students who take courses at Dixie College. Most programs provide cooperative work experience opportunities. Many programs offer transferability from the community college to 4-year institutions in the State.

Distinctive features. The primary initiator of the articulation was the secondary institution—Washington County School District. The program built on earlier advanced placement arrangements to expand opportunities for 11th- through 14th-grade students to get training "in any of the programs in which they are interested and qualified in the Dixie College/Washington County School District area." State support through planning grants was helpful but not vital to this program, which has been operating since 1979 and enrolls 200 high school students a year.

Bellevue, Washington

Articulating Institutions:

Bellevue Community College, Shoreline Community College, seven high school districts in the Bellevue-Seattle area, Snow-Isle Vocational Skills Center (secondary), and Lake Washington Vocational-Technical Institute (postsecondary)

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Kirkland, WA 98034
(206) 828-5615

Program Description:

Purpose. A combination of concerns led to the Bellevue articulation, including the need to find better ways to facilitate the movement of high school students to community colleges, to aid local and statewide economic development efforts, and to use taxpayers' money efficiently for occupational education.

Type of articulation. Bellevue's articulation, due to go into operation in the fall of 1985, will deliver time-shortened occupational programs resulting in associate degrees.

Overview. The Bellevue articulation offers coordinated secondary-postsecondary programs in Office Professions and in Engineering Technology and Drafting. Open-entry/open-exit is available at the high school level and at the Vo-Tech Institute, and students may enter at their level of competence. Course competencies for each level are contained in "file folders," and high school instructors check off the competencies students achieve. Matriculating high school students may then take their file folder to the community college to receive course credit when registering. Credit is granted without testing or cost. Bellevue and one high school also have an informal articulation going on with a graphics program, which shares an advisory committee and has articulated curricula.

Distinctive features. The Bellevue collaborators have taken a modest but determined approach to time-shortened occupational program articulation, focusing first on two program areas, with plans to expand to others later. The size of the effort—involving so many high schools and three postsecondary institutions—distinguishes the program for its ambition. The program also reveals the facility with which excellent communications and promotion of the articulation concept can win the support of faculty and staff, even when it is impossible for all to become personally involved in planning or development.

Waukesha, Wisconsin

Articulating Institutions:

Waukesha County Technical Institute (WCTI) and nine local school districts

Contact Persons:

Marlena Mackie
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Student/Instructional Development
Waukesha County Technical Institute
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Pewaukee, WI 53072
(414) 691-5313

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Local Voc. Ed. Coordinator
Waukesha Public School District
222 Maple Avenue
Waukesha, WI 53186
(414) 521-8846

Program Description:

Purpose. The articulation is intended to provide students with advanced placement opportunities, to eliminate duplication of training, to save students' time, to strengthen educational programs, and to attract more and better students.

Type of articulation. The articulated competency-based programs are designed to enable students to receive advanced standing at Waukesha County Technical Institute (WCTI) without fees or testing for the college credit received. The time-shortened articulation model lets students complete the college program more quickly.

Overview. High school graduates may receive college credits in any of nine associate degree and vocational programs at WCTI for competencies mastered at the secondary level. The articulation agreements focus on the match between the secondary and postsecondary curricula based on competencies taught in both curricula. The high school instructor must recommend that the student merits advanced standing status at WCTI. Students must identify their status for advanced standing when meeting with a WCTI counselor during the WCTI admission process. WCTI may grant full or partial credit for the competencies completed at the secondary level. No fees are charged for the credits for which advanced standing is awarded.

Distinctive features. The articulation established at Waukesha represents a competency-based education system that facilitates articulation and the awarding of credit for advanced standing at WCTI.

CHAPTER 3

ESSENTIAL PRACTICES IN ARTICULATION

Secondary-postsecondary articulation practices across the Nation have certain elements essential for success. These elements have been distilled into the following 10 "principles for articulation success" to guide educators in implementing programs.

Ten Principles for Articulation Success

1. Leadership and Commitment from the Top

Strong leadership and commitment at the top administrative level are required of all schools and colleges involved in the articulation arrangement. This is often a long-term process requiring continual effort by all parties involved.

In California, the complex vocational technical "2 + 2" articulation between Bakersfield College in the Kern Community College District and Kern High School District was spearheaded by the college district chancellor, the college president, and the high school district superintendent. Their hard work inspired the establishment of a joint agricultural facility and an articulated agriculture curriculum.

In South Carolina, the commitment to further articulation by the president of Greenville Technical College, as well as the high school administrators, is well known. Their efforts were reinforced by the allocation of resources and the priority given to the articulation effort.

In Palatine, Illinois, the importance of leadership and commitment was stressed by members of the Northwest Suburban Career Cooperative. This articulation effort, involving three high school districts and William Rainey Harper College, was in response to a statewide effort to regionalize articulation.

2. Early Faculty Involvement

Faculty involvement in the development of articulation procedures and materials is essential to articulation success. When possible, faculty members should be included in articulation planning and curriculum development meetings. Also, in order for articulation participants to know, understand, and gain respect for each other, regular planning, development, and review meetings need to be scheduled. To reduce turfism, these meetings may be held in various school locations. This would also provide each participant the opportunity to see the others' facilities.

When the chancellor at Bakersfield College and the superintendent at Kern High School District (California) were asked what changes they would make if they were undertaking articulation

anew, both said they would involve *all* agricultural faculty members from the very beginning. Their expertise and their support were needed.

Administrators at Washtenaw Community College and the 11 area school districts' in Ann Arbor, Michigan, learned very quickly that involving faculty in the developmental process was important. Because so many school districts were involved, the secondary schools found it helpful to coordinate and reach mutual understanding among themselves before articulating with the college.

The 15 high schools and 4 career centers in the Greenville (South Carolina) School District experienced dramatic changes due to horizontal articulation. This effort involved the development of performance-based education guides for many vocational areas. It brought uniformity to what was being taught, raised teaching standards, and encouraged teachers to work toward the same goals.

An important aspect affecting teachers' attitudes was whether or not they would receive released time to do the planning, development, and coordination required in the development of the guides. Although most teachers were willing to give some extra, unpaid time, this became burdensome over an extended period. If teachers are to have major responsibility in curriculum development or revision, a provision for released time is crucial.

3. Relationships Based on Mutual Respect and Trust

Respect for, and trust among key persons in each organization is essential in the articulation arrangement. Professional respect is achieved only when people talk about their goals and accomplishments and share their aspirations for the future. Building trust is often a lengthy process that develops through working together toward common goals. In advanced placement situations where high school teachers certify the competencies of their graduates, skepticism is soon erased when college instructors see that students coming to them really have acquired specified competencies.

Leaders at Montcalm Community College and the high schools in its district (Sidney, Michigan) emphasized the importance of college instructors and high school teachers knowing each other and learning to work together. To promote this, the college administration sponsored dinners, site visits, and meetings for related faculties. As a result, mutual respect and trust developed.

In Bakersfield, California, the situation was different. The chancellor of the community college district and the superintendent of the high school district had worked together in the public school system. The agricultural teachers and faculty members from the high schools, regional occupational center, and the college also had worked together on contests, Future Farmers of America projects, and community agricultural events. These in-depth relationships enabled these leaders to create a true vocational technical "2 + 2" articulation system. Here they share a newly developed agricultural facility, as well as a totally new 4-year agricultural program for grades 11-14.

With the electronics industry flowing into the Sacramento (California) area, American River College in the Los Rios Community College District and the Sacramento-area high schools chose articulation as a method to improve and enlarge their capacity to provide electronics programs. To develop the necessary relationships and expertise, the college provided inservice training to the

high school electronics teachers, then used those teachers as a pool from which to select part-time teachers. By working together, respect and trust emerged. Both groups saw articulation as a community approach where all parties were equal.

4. Mutual Benefits to All Partners

Articulation requires extra effort, time, and resources. Participants of articulation activities are not likely to commit themselves until they clearly understand the benefits. In fact, the benefits must exceed the costs. All institutions in this study agreed that articulation serves students best by saving them time and money, since courses do not have to be duplicated. Also, when secondary and postsecondary teachers work together to review, upgrade, update, and coordinate their curricula, not only do the curricula improve, but the teachers themselves benefit from the process. Finally, faculty and administrators at all levels can use articulation as a recruiting and public relations tool. Most articulation programs provide graduates with higher level competencies in response to employers' demands.

Washtenaw Community College (Ann Arbor, Michigan) and 11 area school districts testified that the articulation process has improved relationships between faculty and administrators and their colleagues at the other educational levels. Likewise, articulation has strengthened vocational programs. In naming benefits, one of the high school vocational directors said, "It [articulation] makes vocational students feel like college-bound kids."

Those involved with the articulation program in Greenville, South Carolina talked about the benefits of horizontal articulation. The articulation coordinator, whose salary is jointly funded by the school district and the college, worked with teachers at the high school career centers to develop performance-based curriculum guides. These guides enabled career centers to have common course objectives and performance standards for the first time.

Greenville Technical College representatives talked directly with high school students about the advantages of articulation. The college felt that the strengthened, articulated programs attracted more and better students, thus benefitting area business and industry.

Bellevue, Washington school districts and community colleges expressed appreciation for the improved communications and respect that have developed as a result of their articulation arrangement. The driving forces in creating this articulation system were the needs to facilitate students' movement between levels, to enable students to acquire more skills in less time, and to attract more and better students into vocational technical programs.

5. Written Articulation Agreements

A formal, written articulation agreement that is renewed annually should be prepared and signed by the chief executive officers (CEOs) of the schools and colleges. Most articulation sites in this study have formal, written agreements and felt these documents were important for smooth operation. Sometimes the entire process started with a memorandum of understanding and, as the articulation system became more fully developed, a written agreement was signed by the institutional leaders. Practitioners advise that an agreement be specific enough to establish the system and flexible enough to keep it running.

Most articulation sites had agreements at two levels: (1) the institutional level, signed by CEOs; and (2) the program level, signed by the department heads and/or other administrators. An

important feature in both agreements was the provision for annual review, revision, and renewal. Also, after agreements are signed, persons both within and outside the educational institutions should be informed about articulation opportunities.

Articulation agreements between Brevard Community College and the Brevard County School District (Cocoa, Florida) were organized differently in that there was a separate agreement for each program area signed by the college president and the superintendent of the school district. Each agreement lists the secondary course certified and the postsecondary course for which credit will be received. (The actual credit is awarded when the student is enrolled at Brevard Community College and successfully completes the next higher sequential course with a C or better.)

Brevard Community College reported that these agreements are a source of pride and are referred to whenever their faculty members talk to high school students. All 10 high schools in the county, as well as the three college campuses, are involved in the agreements.

The Washington County School District and Dixie College, in St. George, Utah, have a written agreement signed by the school board president, the superintendent of the Washington County School District, and the president of Dixie College. This agreement became the front page of a booklet describing the curriculum master plan for area vocational programs. The booklet provides information on the steps involved in development of the plan, descriptions of programs and courses, and information on transportation, time arrangements, facilities, student credit, and costs.

In 1984, the Texas legislature passed H.B. 72 requiring school districts to articulate vocational programs with colleges. Texas State Technical Institute (TSTI) in Waco saw this as a good opportunity to establish articulation relationships with high schools in the State. As of summer 1985, the four campuses of TSTI had executed a total of 544 general institutional written agreements and 312 program-specific agreements. This has benefitted TSTI by good public relations in creating an awareness of what the college offers. Their program-specific agreements identify the TSTI program courses for which a specified amount of credit is given. Credit is conditional upon the student's satisfactory progress in the first quarter of enrollment.

6. Open, Clear, and Frequent Communications

Communication between parties in the articulation process should be open, frequent, and clear. Key groups—program faculty, administrators, and so forth—need to meet regularly. Equally important is communication within each institution, from administrators to faculty and vice versa. Several sites mentioned the need to communicate effectively the opportunities and benefits of articulated programs to school counselors, students, parents, and employers. Unless these four groups are well informed about the articulated programs, the best system in the world will not be effective.

Administrators in the Regional Vocational System (RVS), established in the Palatine (Illinois) area, emphasized the need for faculty of all involved districts to meet with the central planning group very early in the planning effort. This permits the program's philosophy and objectives to be stated and explained. Likewise, instructors who may worry that the articulation plan will phase out their jobs can ask questions and make recommendations. Good communication and early involvement can help reduce personnel resistance to the changes brought about by articulation.

In Waukesha, Wisconsin, the Panel for Articulating Vocational Education (PAVE), composed of the vocational coordinators/directors in the school districts and the technical institute, has brought continuity and direction to their articulation effort. Leaders, who have been meeting monthly since 1978, stated that a major communication thrust is needed to inform counselors, students, and parents of the opportunities and advantages of the articulated vocational technical programs. Programs must be "sold" to the students so that the students will take advantage of the free institute credit for their high school vocational work.

In Greenville, South Carolina, those involved in the articulation program are enthusiastic about the benefits they have already received, but realize they need to put more effort into informing guidance counselors—making sure they are informed fully about what has been accomplished through articulating vocational technical programs and about the benefits provided to students. Further, Greenville is now ready for a stronger public relations program so the students, parents, and employers are more aware of the opportunities provided by articulation and the educational improvements that have been created.

7. Modest Initial Goals

When embarking upon articulation, select a vocational technical program area where conditions and attitudes favor articulation. Then build upon that success in developing other articulated programs. A department or vo-tech area where faculty members have demonstrated openness to change and can perceive the benefits of articulation to their students and to their program is a good place to begin. Those departments that have active relationships with their counterparts at the other educational level also represent potential starting points.

In addition, it is important to concentrate administrative efforts and resources toward only one or two program areas. Once articulation is successfully established, the procedures can be applied to other vo-tech areas. The success and demonstrated benefits of the early established articulated programs will help convince other departments that they too should articulate.

Surveys of agricultural employers taken by both Bakersfield College and the Kern High School District revealed the need for additional agricultural specialties and more highly trained agricultural technicians. Neither educational entity was able to meet the need alone. However, by pooling resources, the institutions could buy land on which to build a joint facility and to train their students.

Faculty members from both educational levels recognized the need to improve their facilities and programs and the benefits to be gained by developing a "2 + 2" articulated agricultural program. Most of the agricultural instructors were from the Bakersfield area, many of the college instructors had taught in the public school system, and all knew each other well through working together on FFA contests and other agricultural projects.

Today, faculty members are highly supportive of the program and proud of what they have done in other vocational technical areas. The college district chancellor and the high school district superintendent would like to develop "2 + 2" articulated programs in other departments.

The approach used by the Regional Vocational System in Palatine, Illinois, has been to work on programs where faculty and staff of all four districts have expressed special interest and willingness to work.

In the seven-campus Maricopa Community College District in Phoenix, Arizona, leaders took a decentralized approach, that is, each occupational dean was asked to decide the best way to initiate articulation. Program successes were then used to foster articulation elsewhere in each college.

Districtwide articulation was a mammoth undertaking because the seven colleges annually serve more than 100,000 students and receive students from 17 high school districts. The number of articulated programs has grown rapidly and encompasses various types of articulation—advanced placement, occupational credential acceptance, joint program development, resource coordination, regionalization, and contracting with other institutions.

8. Clearly Defined Responsibilities

An individual should be assigned the responsibility for articulation, whether an articulation coordinator jointly funded by the high school district and the community college, or separate persons assigned at each level. The experiences at the articulation sites revealed that, to ensure success with articulation, someone must be assigned the responsibility for articulation and given the time and resources to bring it about. The arrangement that shows maximum commitment and cooperation is the joint employment of a single articulation coordinator funded by both levels of education. Such an arrangement is particularly important when extensive curriculum revision and development must be undertaken.

If joint employment is not feasible, then someone should be assigned the articulation responsibility within each educational entity. Again, time and resources need to be made available. If a grant provides funds for articulation, a commitment should be made to the articulation coordinator that the position will be continued after the grant expires. Such commitment is necessary to ensure continuity of leadership and to keep the process moving.

In Greenville, South Carolina, administrators at both levels, as well as teachers, credit their articulation coordinator with the success of their activities. The coordinator's salary is funded equally by Greenville Technical College and The Greenville County School District. Both parties recognize the importance of the particular skills this coordinator brings to the job; namely, human relation skills and technical writing skills. The human relation skills are very important in helping develop enthusiasm and in gaining teachers' support for articulation. And, since the articulation coordinator writes the curriculum guides, his technical writing skills are essential to the job. To date, he has prepared a 105-page *Policy and Procedures Guide for Articulation of Occupational Education Programs between The School District of Greenville County and Greenville Technical College*. In addition, he has written three workshop guides: (1) *Writing Performance Objectives, Actions, and Standards*, (2) *Writing Outcome-Referenced Measures*, and (3) *How to Use the Articulation Curriculum Guide to Prepare Lesson Plans*. He also has developed a system and materials for evaluating the curriculum guides and for evaluating the articulation process.

In Ann Arbor, Michigan, Washtenaw Community College and 11 area school districts jointly hired an articulation coordinator to lead the process of articulating occupational programs. This person worked with the teachers in coordinating their programs and identifying tasks, competencies, and standards; she then prepared competency-based curriculum guides. Most people felt it was important to have a neutral coordinator who was not identified with any one school or system.

In St. George, Utah, people were adamant about the importance of having someone in charge of planning and developing the articulation program, preferably an experienced administrator and/or curriculum developer. During the developmental stages of the program there, one person reviewed all the vocational education curricula at both levels for all the participating schools and designed a master plan for articulation and recommendations for modifying individual program areas. This coordinator was employed equally by Dixie College and by the county school district and maintained offices in both locations. Once the program was developed and firmly established, however, the articulation process operated effectively with two directors, one at the college and one with the school district. These two directors work closely together to coordinate efforts.

Both Greenville, South Carolina, and Ann Arbor, Michigan, stressed the importance of having adequate secretarial help. The agricultural faculty in Bakersfield, California, credited the department secretary as being an essential team member who enabled them to create the vocational technical "2 + 2" articulation system. In addition to having an articulation coordinator, provision for clerical support services is also necessary.

9. Competency-based Curricula

Building articulated educational experiences is easier when learning activities are built around the competencies to be developed. Competency-based education helps students see what skills they have developed and where they should begin their postsecondary program. It provides a structure for examining courses, and instructors have a common approach and educational language when planning articulation.

Washtenaw Community College and the school districts around Ann Arbor, Michigan, have a well-organized articulation system that grants equivalency credit to students for identified task competencies achieved in secondary programs. The participating high school teachers maintain a competency record for each student that certifies areas and levels of task achievement. When the student requests that this record be forwarded to Washtenaw Community College, the college awards advanced placement credit in articulated programs for the certified competencies. To receive credit, students must enroll at the college within 24 months following high school graduation. Although there are no tests and no fees for equivalency credits, students must complete six Washtenaw Community College credits before articulated credits will be recorded on students' transcripts. The maximum number of articulated credits that can be awarded are 9 credit hours for a certificate program and 18 credit hours for an associate degree program. The articulated program areas are Auto Mechanics, Office Education, Welding and Cutting, Food Management, and Electronic Occupations.

In Greenville, South Carolina, the development of the competency-based curriculum guides went smoothly. The instructors whose programs were involved provided information to the coordinator who then developed the guides. Instructors were provided released time for meetings. Another important factor was the flexibility the instructors had in using the guides. They could use their own particular skills and methods in teaching the specified competencies and levels.

Educators at Waukesha Technical College in Wisconsin and nine school districts in its service area considered the competency-based approach to education an essential part of the articulation process. The system has been in operation for several years. High school vocational teachers sign off for students, indicating that certain competencies have been reached (usually an A or B grade). There are no fees and no examination for college credit for articulated courses transferred from participating high schools.

Hennepin Technical Centers (HTC) around Minneapolis, Minnesota, have developed an approach to education that is entirely competency based, individualized, and open-entry/open-exit. Each program curriculum lists its competencies and job-related tasks. Curricula are organized into individualized learning packets that lead students to learning resources and through the tasks necessary for mastering a competency. Hennepin Technical Centers serve both secondary and postsecondary students with essentially the same vocational training programs. Consequently, articulation takes place within HTC. The secondary program director and the postsecondary program director have equal responsibilities for articulation and between the two of them work out most procedures, modifications, funding decisions, and so forth. This unity of efforts simplifies the entire articulation process.

10. Common Focus on Mutual Goals Rather Than Individual Turf

Developing interinstitutional relationships is a complex process whereby participants must be willing to work for their common good rather than to their own advantage. When institutions are competing for students, credit hours, or resources, it is often difficult to develop a new, cooperative structure linking or integrating parts of their organizations. To get the process started and cooperative relationships established, it is helpful for parties to begin with issues they can agree upon, then build from these. If difficulties are encountered and turfism becomes evident, it is important to keep in view overriding common goals, such as improved or expanded educational programs, better use of resources, and smoothing students' passage from one educational level to the next.

In the Regional Vocational System in Palatine, Illinois, involving William Rainey Harper College and three school districts, all parties were sensitive to protecting their own turf. Problems were quickly overcome, however, by consciously seeking and focusing on areas in which they could quickly reach agreement. On matters less amenable to easy agreement, people learned to negotiate.

Educators in Washtenaw Community College and 11 area school districts in Ann Arbor, Michigan, found it natural for faculty to want to protect their own area; thus, it was important to nurture and accept the contribution of each party. The college felt it could build on whatever base a high school presented because of the college's competency-based approach to education. Advice was given as diplomatically as possible. Keeping in mind that the common goal was to improve education for students helped these educators overcome problems related to turfism.

In Oklahoma City, the three participating educational systems—Oklahoma City Public Schools, Oklahoma City Community College, and the Francis Tuttle Vo-Tech Center—operate under three separate State agencies. Because of the complexity of interagency cooperation, leaders felt it beneficial to have an outside consultant direct the articulation effort and do the related curriculum development work. This person could help with turfism and could be more effective in sensitive areas.

The consultant conducted all meetings, except those related to committee work, and developed the core curriculum. All involved were motivated by the desire to strengthen the vocational technical programs to develop the technical human resources needed to further economic development in Oklahoma City. The institutions with postsecondary students also saw articulation as a way to get quality students. The repeated advice from articulation participants in Oklahoma City was (1) be aware of the political realities, (2) keep service to the students paramount as the goal instead of concentrating on turf, and (3) know that good communication is the key to success.

Action Steps for Articulation

The following action steps will help educators apply these 10 principles in developing articulation systems and articulated curricula. Although they appear in a logical order, they do not have to be accomplished in any particular progression. The steps are specific, but at the same time general enough, to apply to different models of articulation in different educational settings.

- Identify the need for and benefits of articulating with other educational institutions in your area.
- Identify other educational institutions that would benefit from articulating with your school or college.
- Meet with the CEOs of these organizations.
- Involve the chief instructional officers and vocational directors in these meetings.
- Establish the goals to be achieved through articulation.
- Develop written articulation agreements for execution at the institutional level and between program departments.
- Select one or two program areas that appear amenable, where faculty members have established relationships, and that have a particular need for articulation. Once these program areas are successfully articulated and the benefits visible, use these successes to get other occupational departments participating in articulation.
- Involve all faculty from the beginning in the articulating departments in planning and developing the system and the curricula.
- Involve guidance counselors in the articulation planning to get their suggestions and support and to keep them informed.
- Establish clear communication vehicles within your institution and between and among institutions.
- Make clear to those within your institution that articulation is an institutional priority.
- Provide released time to teachers for meetings and for curriculum development or revision.
- Select an articulation coordinator jointly funded by participating institutions, or give someone in each institution the responsibility for articulation and time to do the job.
- Provide secretarial support for the articulation coordinator and faculty.
- Establish a system for certifying competencies or educational accomplishments of students in articulated courses for students to use when they apply for credit at the next educational level.

- Publicize the articulation arrangement and programs to students, parents, and employers.
- Establish a system for reviewing, evaluating, and revising the articulation system and the articulated curricula.

The preceding list of action steps can be used as a checklist as well as a guide when undertaking articulation. The challenges of the process are many, but they are outweighed by the benefits to the students, educational institutions, and employers.

CHAPTER 4

NURTURING ARTICULATION PROGRAMS

All 18 sites investigated for this study exhibited some level of the "essential practices" of a successful articulation program. But assuming that program planners or operators have the "essentials," how do they put it all together? How have articulation programs dealt with such issues and problems as determining high school competencies to be articulated, dealing with faculty resistance to the program, promoting the articulation both to insiders and outsiders, coping with "turf" conflicts, evaluating the articulation efforts, and so forth?

This chapter takes a close look at the operational issues of articulation programs. It also reviews how certain problems arise and how creative people have resolved or worked around them. The result is a collection of special concerns to which those involved in an articulation effort must pay careful attention in planning and operating a program, regardless of type.

Faculty Reluctance

Faculty resistance to the articulation is a serious problem often encountered by programs. Sixteen of the 18 sites met with some form of reluctance or resistance, most often during the planning phase, but sometimes continuing into the operational phase.

A major reason for faculty resistance is tradition. Instructors, comfortable with "the way we've always done it," can become locked into attitudes and practices that hinder successful articulation. Some instructors feel threatened by change, especially when it happens quickly or is mandated "from the top." Others may resent the inconveniences the changes cause.

Of the sites reporting faculty resistance, most have overcome the problem, some so well that faculty now look upon the articulation effort as "a win-win situation" and "the best thing that could have happened." Once faculty reluctance has been overcome, instructors often become avid champions of articulation, since it can bring them more and better prepared students. Following are three approaches to resolve the problem of faculty resistance.

Promoting a "Students First" Philosophy

As an automotives instructor put it, "You've got to think of the students first, not your own convenience." Articulation serves students better than traditional approaches. Proponents of articulation should gain faculty support once this is made clear.

Providing Extra Support for Faculty

To many instructors, articulation means extra work, frequently with little or no additional remuneration. Here are some helpful recommendations drawn from the site and telephone interviews:

- Hire a program coordinator or consultant to write or revise articulated curricula so that instructors are free of the task.
- Provide released time or extra pay for instructors who are asked to write new or revise existing curricula, if hiring a coordinator or consultant is not feasible. Also, pay travel costs and meals for faculty required to travel or work over mealtimes at articulation meetings.
- Schedule articulation meetings at times when students are not present, such as evenings or Saturdays, in order to minimize interruptions and the pressure of teaching schedules.
- Design the articulation schedule to allow gradual implementation of the program so that instructors will have time to get used to it. Don't move too fast.

Writing Articulation Responsibilities into Faculty's Job Descriptions

If instructors' articulation responsibilities are included as part of their job description, these responsibilities can be made part of their evaluation. Articulation work is then counted when calculating workloads and is not considered an add-on.

Institutional Turf Contests

Persons unfamiliar with the field of occupational education are often surprised to learn that secondary schools and postsecondary institutions engage in contests for the same group of students—adult learners. Those familiar with these so-called "turf" conflicts understand that secondary schools have long offered vocational programs for adults, often in the evening, and in this current period of declining high school enrollments, schools typically seek to attract more adults. This places the secondary schools in direct competition with postsecondary institutions, which typically define their client group as "all high school graduates." Given this situation—often described as "if you win, then I lose"—articulation can succeed only if it is seen by both levels as a win-win operation.

Ten of the eighteen study sites found "turfism" a barrier, especially during the planning phase of the articulation. People who overcame the problem used a variety of tactics to deal with it. All tactics were based on a win-win approach and are discussed next.

Getting Staff from Both Levels Acquainted with Each Other

Administrators and faculty at both secondary and postsecondary levels need to get to know each other and gain an appreciation (and concern) for each other's education and training

programs before good working relationships can evolve. Some of the ways the study sites accomplished this are as follows:

- Mix administrators and faculty from both levels on articulation planning or advisory committees. If possible, involve all administrators and all faculty on such committees, mixing educators from both levels of education equally on each.

- Organize visits to partner institutions (e.g., high school representatives visit a community college and vice versa) to familiarize administrators, faculty, and staff with their counterparts' facilities, programs, and personalities. Provide released time for such activities.

- Encourage postsecondary instructors from a particular department to cooperate with their counterpart program at an articulating secondary school and get to know the corresponding secondary instructors. They can often provide the secondary teachers with relevant curriculum materials, invite their students to the postsecondary campus for a tour, and so forth.

- Practice diplomacy at planning meetings. Committee chairpersons and the articulation coordinator must be sensitive to any turf considerations (and other problem areas) and must be prepared to promote flexibility.

Ensuring a Partnership Mentality

In any cooperative endeavor, it is important that all parties be equal partners. Staff at the study sites made the following recommendations for ways to ensure a partnership mentality:

- Appoint or elect cochairpersons, one representing each level (secondary and postsecondary), to each committee involved in articulation.

- Develop meeting agendas mutually.

- Appoint a coordinator or facilitator for the articulation effort who is not identified strongly with any level. Several sites suggest hiring "outsiders"—consultants who have never worked at any of the participating institutions. Such persons may be more effective in sensitive political areas because "outsiders can say things you can't."

- Finance the salary of any articulation coordinator jointly. Alternatively, appoint co-coordinators, one representing each level, and make sure these two people respect each other and can work together closely. Either way, neither group will feel that the coordinator(s)—or the articulation program—"belongs to" the other group.

- Alternate meeting sites and conduct an orientation at each site to familiarize all members with the participating schools' facilities, programs, and people. Do this in advance of program implementation.

- Work first on the "easy" things that lead to agreement. Success with these areas will build a strong sense of cooperation that will be necessary in tackling less agreeable areas or issues.

- Encourage a give-and-take attitude and be willing to negotiate. Remember that the first concern of a successful articulation effort is to serve the students better.

- Be patient. "Nothing succeeds like success." Time and experience with a working articulation program will usually overcome most negative attitudes among reluctant or cynical administrators or faculty.

Keeping People Informed

Few things are as crucial as effective internal communications during the planning and implementation of an articulation program. Whether formal or informal, internal communications can either smooth the path for the program or bring it to a screeching halt. Inadequate promotion of the benefits and details of articulation for faculty and staff can impede implementation, because instructors and counselors are generally responsible for implementing most articulation programs.

The size of an articulation partnership can limit communications, too. Having a large number of participants can tangle communications or slow them significantly. In large articulation efforts (e.g., involving several postsecondary institutions, a large number of school districts, and even other institutions or agencies), restricted funding often makes it impossible to involve all instructors in articulation planning or review. In such cases, only lead instructors participate, thereby increasing the need for good internal communications so all faculty affected by articulation are fully informed.

There are ways in which good internal communications can be built into the structure of an articulation effort. Some of these are as follows:

- Conduct frequent (but brief) meetings of planning committees and involve as many faculty, staff, and administrators as possible.

- Appoint a full-time coordinator or program manager so that people have at least one person to contact for problems and questions.

- Establish exactly whose responsibility it is to communicate the articulation's objectives and plans to colleagues. This is particularly important where the large size of an articulation effort makes it impossible for all faculty and staff to participate on program planning committees.

The approach taken by program communicators can be as important as the amount and frequency of information provided. The following suggestions illustrate these concerns:

- Communicate clearly and honestly to all. Explain all aspects of the articulation. Never distort or misrepresent the basic objectives and plans. As one interviewee put it, "The only way to avoid rumors is to tell it straight."

- Push for acceptance of the articulation. This responsibility belongs mainly to the program coordinator and committee chairpersons, but where articulation efforts are too large to permit all faculty to participate, faculty representatives must share the responsibility of promoting the program. Such promotion should emphasize the mutual benefits of the articulation.

Promoting the Articulation

Once agreements are reached and plans are made, it is all too easy to let articulation fade into the background. Articulation promotion must be an ongoing effort, not just internally, but to the external community as well. By failing to inform local employers, agencies, parents, and especially students of the benefits of the program, valuable resources go untapped and articulated student enrollments suffer. One site felt inhibited from promoting its articulation widely because sensitive situations between two State agencies discouraged any collaboration. This was not a problem for Hennepin Technical Centers (Minneapolis), although there were some difficulties getting people in the community to understand the advantages of the centers' unusual approach to articulation.

Here are some practical ways to ensure effective articulation promotion:

- Disseminate information and promote articulation during regular inservice meetings for faculty and staff, PTO meetings, and so forth.
- Publish a regular (e.g., quarterly) newsletter reporting on articulation objectives, structure, plans, and activities. Disseminate the newsletter to all faculty, staff, and administrators by name and at all participating institutions. Distribution to the general public is also valuable, provided it is not too costly.
- Write a community marketing plan into the articulation agreements, designating the promotional schedule and who will be responsible for promotional activities.
- Develop brochures, letters, and posters for bulletin boards to make secondary students aware of the articulation opportunities.
- Prepare print and audiovisual materials to promote and emphasize the benefits of a dual secondary-postsecondary collaboration. Gear the materials to specific segments of the community. For example, promotion of the program to employers should emphasize the benefits of the program to them (e.g., better prepared workers).

Granting Advanced Credit for Articulation

This section describes some of the practical problems (and their solutions) involved in granting college credit for learning completed in high school.

Determining High School Competencies for Articulation

Usually competencies learned in high school programs do not exactly match competencies desired for articulation in one or more college programs. Some sites debated just how many (and which) high school courses should receive credit at the postsecondary level. At other locations where a number of secondary school districts participate in articulation with one college, the high schools offered similar courses (e.g., typing), but each delivered somewhat different components or competencies. Postsecondary faculty had to decide how to grant credit for the different (yet similar) courses. Such decisions are made in a variety of ways.

Postsecondary schools that have made a strong commitment to articulation usually have already established good working relationships with the collaborating high school teachers. In such cases, postsecondary admissions staff will accept the high school teacher's word that a matriculating high school student has mastered certain skills at an acceptable level of competency for advanced credit. The high school teacher signs some kind of articulation voucher indicating which courses and/or skills are to be credited at the college.

At the start, some college faculty may believe that high school teachers' tendency will be to recommend the award of too many credits. Usually, the opposite occurs. The experience at the Williamsport (Pennsylvania) site with follow-up research suggested that some participating high school teachers were too restrictive about whether their secondary students had adequately mastered a competency for postsecondary credit. The same study also showed that, on the average, students who received advanced credit via high school teacher vouchers obtained better grades in their postsecondary classes than did students from the general population.

The study sites found ways to work around these credit award problems, as shown in the following suggestions:

- Require matriculating high school students to take tests to determine how much advanced credit they will receive. A number of time-shortened articulation sites use their own tests, whereas others use a standardized test, such as CLEP.

- Encourage horizontal articulation among high schools, possibly through a district consortium, to ensure that the same content and level of difficulty are found in all high school courses with the same (or similar) titles.

- If the postsecondary curricula are competency-based, negotiate individual agreements with articulating high schools to grant credit for specific competencies mastered at the secondary level.

- Work out a formal agreement between the postsecondary and high school faculty to adjust their respective course content to permit a better articulation. (Further discussion on articulating curricula appears in a later section.)

Charging for Credit Hours Awarded

Most of the postsecondary institutions at the study sites charge a small fee to administer tests for granting advanced credit and/or to perform relevant record keeping. None of these institutions charge the full tuition price for the number of credits granted.

Grading of Advanced Credit

In general, the postsecondary institutions do not assign a grade for the individual courses for which they grant advanced credit. Neither do they calculate such credits in establishing an accumulative grade point average. Some schools record this type of advanced placement credit as "experiential learning" on the student transcript. This study also found that most postsecondary institutions hold the advanced credits in escrow until the student has completed one or more postsecondary courses in a related field of study. The escrow credits become real credits only after certain advanced courses are completed at specified minimum grade levels.

Many articulation agreements enable students to earn credits either toward high school graduation or toward postsecondary programs. Occasionally, State regulations allow the awarding of dual credit. Another consideration in agreements is how long advanced credit will be good after high school graduation (i.e., whether or not escrow credits may still be converted to real credits 5 years or 10 years later).

The following recommendations can help resolve such concerns:

- Establish a clear, uniform policy for how long advanced credit is good at a postsecondary institution once the secondary student leaves high school.

- Grant secondary students both high school and postsecondary credit, wherever feasible, for articulated courses with essentially postsecondary content.

Written Agreements

Written agreements between the secondary schools and the postsecondary institutions are essential to successful articulation efforts. There ideally should be two types: institutional agreements and program agreements.

The *institutional agreement* should be executed at an early date, outlining the general terms of the articulation arrangement, institutional involvement, cost sharing, implementation schedule, and types of programs to be articulated. This agreement should be signed by the superintendent of schools for each cooperating high school and by the postsecondary institution president, with the approval of the respective governing boards. Once the agreement is signed, the articulation arrangements should be widely publicized so that the entire staff of all collaborating institutions are aware of the commitment and its terms.

Program agreements deal with the operational details of articulation, such as the transfer of credits, costs, quality control, evaluation, record keeping, and so forth. These documents should deal with only one program area per agreement and are best worked out through a series of meetings among involved faculty, department chairpersons, and deans, with the assistance of the appropriate program advisory committee. Once all details have been worked out in principle, the superintendents of schools and the postsecondary president should also sign the program agreements.

Institutionalizing Articulation

Seven study sites reported that their articulation effort started to lose steam at some point during planning or implementation—nearly bringing the program to a halt. Some efforts involved so many participants and grew so complex that communications faltered, protocol grew cumbersome, and the overall system become increasingly unresponsive. One program faced abrupt cessation when the program coordinator—whose vision had driven the articulation up to that time—suddenly left for a new position in another State.

Institutionalizing the articulation program as early as possible appears to be the best way to head off such problems. Though it is important to have a central change agent to keep the planning and implementation processes moving smoothly, program continuation must not depend solely on that one person (or a handful of highly creative people). Administrative responsibilities

and procedures should be written out, along with a manual of policies and operations to guide the eventual successors of the articulation manager(s). It is also important to provide inservice education about articulation for new teachers.

Evaluating the Articulation

A critical part of institutionalizing an articulation program is establishing a procedure for periodic review and quality control. A number of study sites reported difficulties in evaluating their overall articulation effort. Problems centered around collecting pertinent data; determining what group should take responsibility for evaluation; or determining what articulated program areas need to be created, revised, or phased out. A particular area of evaluation concern was tracking students who enter the postsecondary institution with articulated credit—data needed both for overall program evaluation and for annual reviews of the specific training programs. On the one hand, a case can be made for student anonymity in this area; on the other hand, data must be gathered for evaluation.

Most of the study sites found ways to avoid these quality control problems:

- Establish a record-keeping system for the articulation. Include coordinated systems to track articulating students once they move into the postsecondary part of an articulated program and to keep attendance and other records that are needed by the other participating institutions.

- Create a continuing body (e.g., advisory committee or central board) whose responsibilities include conducting an annual or biannual evaluation of the overall articulation effort.

- Fund the hiring of consultants, if necessary, to conduct periodic assessments of articulation as well as of employer needs and community demand for articulated programs. This data would be collected for the annual or biannual evaluation of the overall articulation effort to assist in determining when to create, revise, or phase out articulated training programs.

Articulating the Curricula

Meshing Secondary-Postsecondary Curricula

Many program planners face problems with incompatible secondary-postsecondary curricula when designing their articulation programs. For example, the curricula at the postsecondary level may be competency based, whereas the secondary curricula are not. Curriculum changes are difficult to make unless both high school and postsecondary faculties agree on the total curriculum content. Efforts to work out such agreements constitute the most difficult part of negotiating an articulation contract.

One site had headaches with the postsecondary curricula because the fundamentals were buried in existing courses rather than being clustered together in introductory courses. These fundamentals could be mastered by high school students who could then receive advanced credit when articulating to the postsecondary level. Appendix E contains a sample curriculum for each of the three common articulation models: advanced placement, pre-tech, and vocational technical "2 + 2."

The sites had a number of recommendations for dealing with these problems:

- Redesign curricula at both levels to be *competency based*, whenever possible. As one site coordinator put it, "Competency-based curricula are the best groundwork for articulation, because they make the process smoother and easier to evaluate, too."

- Separate fundamentals in postsecondary courses and cluster them together in introductory courses that articulating students can bypass for advanced credit.

- Give instructors inservice training and support when implementing any new or revised curricula. This is especially important when implementing articulated competency-based curricula for the first time.

- Keep curriculum guides flexible. Allow instructors to use their own teaching methods to develop the specified curriculum objectives or competencies. Concentrate on results, not methods.

No site is likely to be able to borrow intact an articulated curriculum developed elsewhere. Nevertheless, the sample curricula given in appendix E can serve as examples of "2 + 2" programs in effect at various locations around the Nation.

Developing or Revising Articulated Curricula

Most articulation programs involve some curriculum development or revision, sometimes minor, other times extensive. As more States or school districts opt for competency-based programs, the task of curriculum writing becomes more complex. Faculty may not be sufficiently prepared to perform the necessary writing. They may disagree—internally and across levels—on what courses or program objectives/competencies should be taught. They may waste time writing new curricula because they do not know where to find existing curriculum materials to adapt or modify for local use. Finally, they may be overwhelmed by the scope of the task—too many curricula to be written or revised in too short a time span.

Seven study sites had curriculum development problems of one sort or another; they recommended the following strategies:

- Hire professional curriculum developers as consultants or program facilitators, whenever possible. This removes the burden of curriculum writing from teachers and should produce the desired curricula faster. It may seem expensive, but is usually less costly than giving teachers released time to write curriculum materials.

- Provide staff development and inservice training for faculty expected to write on curricula for articulation.

- Arrange, where possible, for secondary instructors to teach part-time at the postsecondary level in order to upgrade their content knowledge.

- Conduct a literature review and resource survey before starting work on any curriculum. Do not rely on only one source or personal experience when writing or revising curricula. Aside from curriculum guides and other obvious resources, search for data from business

and industry on current entry-level job requirements, job tasks, and performance standards, and tap the resources at the National Center for Research in Vocational Education, where databases of vocational technical curricula are maintained.

- Take an evolutionary approach to phasing in competency-based curricula, focusing first on common curriculum elements and gradually redeveloping individual courses along competency-based lines.

Solving Some Open-Entry Problems

Only a few articulation efforts involve open-entry programs, but they have unique problems. One is providing fair and equal access to participating secondary schools when slots open up for high school students in articulated courses. Another is the high dropout rate for solitary students entering an open-entry program. The following are recommended solutions:

- Use a lottery system to provide fair and equal access to program slots when the number of opening slots cannot be distributed evenly among participating secondary schools.

- Use a "buddy system" for students entering an open-entry program. That is, always have at least two students enter the program together so that no new student must start it alone. This helps reduce the dropout rate.

State Education Agencies and Articulation

State education agency policies, politics, and funding practices are a major source of concern for many articulation programs. The problems differ from State to State (e.g., some States mandate secondary-postsecondary articulation, others do not), but they tend to have some common elements, as discussed next.

Coping with State System Conflicts and Mandates

One-third of the study sites have run into problems with State legislation or their State educational governance system because of their articulation activities. In most cases, the locus of the difficulties is dual State boards that control vocational technical education at different levels. (One site must deal with three State agencies.)

When vocational technical education governance and funding are divided among different agencies, the agencies often have differing philosophies. The agencies' reporting requirements differ, and they usually require new or revised curriculum offerings to be submitted for approval. Dual State boards may compete for programs and resources, engendering political conflict and rivalry that can discourage articulation. Finally, board funding policies (established in good faith to prevent double funding for students who are simultaneously enrolled in high school and college) can become obstacles to articulation and cannot be waived easily.

Even where State boards are not a problem, articulation programs must often wrestle with slow or inflexible State agencies for approvals and monies. The amount of paperwork required can be staggering. The State may also have different teacher certification requirements for secondary

versus postsecondary instructors, which may put an end to some cross-teaching plans after careful negotiation at the local level.

Some State mandates do not aim specifically at articulation programs, yet affect them substantially. For example, a number of States have recently mandated that vocational technical training programs be competency based, with highly specified curriculum content and strict requirements. A few States have raised the requirements for high school graduation. Enrollments are shrinking in secondary vocational education, and leaders of such institutions feel that more troubles are soon to follow.

One study site has found itself in a difficult situation because its articulation program—which serves both secondary and postsecondary students in the same facility—seems to confuse its State boards. Another has found its articulation effort hampered by the fact that the dual State boards are political rivals that actively discourage any kind of collaboration across secondary-postsecondary lines.

All of these problems are among the most difficult to resolve, because control is out of the hands of the local cooperating institutions. Even so, the study sites made the following recommendations for positive action:

- Spend time with State board officials and legislators to establish good working relationships and to promote the articulation program. This may mean frequent travel to the State capital for the chief executives, the articulation coordinator, and/or other program planners.

- Weigh the benefits and disadvantages of a state-mandated articulation policy before deciding to campaign for one (if none currently exists). Many articulation programs operate successfully without specific State funding or guidelines. One site administrator cautioned, "A State system of articulation is not the answer. Articulation happens best on the local level."

Funding Articulation

Study sites that have looked to their State boards for funding articulation planning and/or operation have met with mixed success. A number of States have provided some planning funds, but others will not fund articulation efforts at all, even (in at least one case) when the State itself mandates the articulation. Several States have funded articulation planning only to discontinue the funding at the implementation phase. A few have changed the funding levels from year to year as the State boards change their minds about the priority of articulation.

Following are strategies used by the various study sites in dealing with the expenses of their articulated programs:

- Seek State planning grants. Often funds are available but are not well advertised or specifically earmarked for planning. Talk to people at the State agencies to find out what is available.

- Consider lobbying for State support of articulation. A number of States (e.g., Florida, South Carolina, Wisconsin, Oregon) have progressive support systems for secondary-postsecondary articulation, and those State policies and plans can serve as templates for a proposed funding structure in other States.

- Seek planning grants and other donations from nonpublic sources. For example, the Bakersfield, California, site funded its curriculum development with a Fund for Improvement in Postsecondary Education (FIPSE) grant. Local business and industry has donated money, equipment, and labor to articulation programs, too.

- Investigate ways for partner institutions to donate in-kind contributions to the articulation effort. For example, the Bakersfield site needed to construct a new, shared training facility, so community college faculty dismantled the old facility, local employers removed the dismantled pieces, and the college agriculture department landscaped around the new building.

Various Other Articulation Details

Site visits to various locations disclosed valuable suggestions for implementing a range of other articulation-related details. Each is treated separately in the following sections.

Articulating the Pre-tech Curriculum

The technician of the future will need to be better prepared in the areas of mathematics, science, and computer utilization while still in high school. Pre-tech (also called core curriculum or "tech-prep") training is a separate high school track that provides this kind of preparation for students going on to 2-year technical training. The concept is based on the belief that better prepared students entering the postsecondary level will earn better grades and become better workers because they will have acquired advanced skills.

Many high schools develop their pre-tech curricula independently, basing offerings on current admissions requirements for high-technology training at the postsecondary level. In other cases, secondary schools work directly with the colleges or institutes to develop a pretech curriculum.

When planning articulation with pre-tech curricula, postsecondary institutions must keep in mind that secondary vocational schools cannot divorce themselves from their major mission of preparing people for entry into the job market. For that reason, some educators believe that pre-tech is more applicable to comprehensive high schools than to vocational high schools.

The competencies defined for the pre-tech curriculum should be college preparatory, and therefore, postsecondary input is needed when planning the curriculum. Because postsecondary institutions must take some leadership role in developing pre-tech curricula for articulation, the institutions should make their leadership more palatable by focusing on the needs of the students and the unique demands of the emerging technologies.

Articulating pre-tech curricula poses a unique problem for some smaller postsecondary institutions with low enrollments. For example, a small community or technical college may offer small-enrollment engineering technology programs requiring the satisfactory completion of specific preparatory courses with very few electives. Where do such schools put entering students who have had pre-tech in high school? When they award these students advanced credit, they create yet a new set of problems: their small classes have been further reduced in size, and no advanced courses are available for the advanced placement students during the first term of the curriculum.

Coordinating Grading Structures

Inconsistencies between the secondary and postsecondary grading structures can create headaches for articulation efforts. This is particularly troublesome when one level uses competency-based curricula and the other does not.

Negotiation is the key. Here are some recommendations:

- Utilize the T grade (or some similar mark) to indicate that credit has been transferred.
- Avoid the use of pass/fail grading for articulation. Some institutions use a direct transfer of grades (e.g., A for A, B for B, and so forth).
- Assign dual grades for articulated courses where incompatible grading needs cannot readily be negotiated. For example, Hennepin Technical Centers (Minneapolis), which deliver articulated training for both high school and postsecondary students, assign a standard letter grade (e.g., A-F) for high school grading purposes and a number rating (e.g., 1-6) for the centers' own competency-based cumulative records.

Resolving School Calendar and Schedule Conflicts

Differences in the secondary and postsecondary school calendars and/or daily schedules create access problems if articulation involves enrolling high school students simultaneously in secondary and postsecondary classes. Such differences also cause trouble in scheduling bilevel meetings of articulation committees.

Calendar problems occur mainly because postsecondary semesters or quarters and the overall length of the school year are generally shorter than those of secondary schools. High school students who take course work for secondary credit at a community college, for instance, may be required by the State to spend more time in a class than the community college normally offers. Secondary and postsecondary vacation calendars (i.e., holidays, breaks) frequently differ, as well, thereby causing students to attend class on days considered holidays by one of the institutions.

Here are some solutions offered by the study sites:

- Prepare a formal request to the State board of education to enable secondary-postsecondary calendars to "flex" to meet articulation needs. For example, articulation planners at one study site obtained State permission to have the community college teach courses to high school students on the high school calendar (i.e., more days per year).
- Arrange for high school students taking courses at a postsecondary institution to work at relevant part-time jobs whenever the postsecondary school is not in session. The St. George (Utah) site has used this strategy to good advantage.
- Schedule college classes in such a way that high school students have access. High school students attending a college closed for a holiday should not be left without something to do when their friends are attending classes in the high school.

Solving Transportation Problems

Many programs involve transporting students from their home schools to another institution for course work. Increased costs, scheduling, time loss, and liability concerns can create problems in otherwise smooth-running programs. This is especially true where the partnership involves many secondary institutions.

High schools in particular worry about transportation problems, because they generally have the most students to transport and because they must account for students' hours of attendance. The study sites made the following suggestion:

- Apply to the State board to waive some less-crucial high school requirement in order to allow bus travel time. For example, the articulation in Sacramento, California, got the State to waive the physical education requirement to allow bus travel time for high school students.

Coordinating Counseling Services

Counselors are a crucial link in articulation because they, more than any other group, promote articulation opportunities to high school students. But too often, secondary counselors are already overwhelmed by having too many duties and too many students to advise per counselor. Sometimes counselors are given insufficient information on articulation opportunities to do an effective job of promoting them. In other cases, students do hear about the program, but too late to take advantage of it.

The following suggestions are ways of coordinating counseling services to improve promotion of the articulation to students:

- Write into the articulation plan some explicit procedures for disseminating program information to counselors at both levels.
- Appoint a coordinator of articulated student services to facilitate flow of information and mutual cooperation.
- Make available special articulation counselors whose duty it is to promote the articulation opportunities. This will help ease the burden of overloaded secondary counselors.
- Hold joint career days, financial aid meetings, and orientation tours related to the articulated programs.
- Begin promoting articulation opportunities to students in grades 9 and 10.

Conclusion

Internal problems with people, systems, and curricula occur more frequently than do problems with State agencies and the like, but internal problems are more amenable to solution, usually through thoughtful planning and negotiation. Program planners and managers may be able to avoid many of these problems simply by becoming aware of them: forewarned is forearmed.

CHAPTER 5

RELATED ISSUES

The major portion of this guidebook deals with curriculum articulation models for time-shortened or advanced skills programs. In conducting this study, however, staff found many other types of articulation or cooperative models, such as sharing facilities, contracting, combined enrollments, enrichment, contracting with proprietary schools, and consortium arrangements. Although most of the procedures described in chapters 3 and 4 apply to all cooperative efforts, these latter ventures provide unique challenges and opportunities. This chapter reviews the more significant tangential efforts, which may lead to secondary-postsecondary curriculum articulation.

Sharing Facilities

Many vocational education secondary and postsecondary institutions share facilities. This happens most often when the institutions offer programs that require very expensive, sophisticated high-tech equipment—the kind of resources that one school alone usually cannot afford. For example, training programs at the Bakersfield (California) site, the Minneapolis (Minnesota) site, and the Williamsport (Pennsylvania) site use the same equipment and facilities for both secondary and postsecondary students.

An institution may make its labs available to another institution that brings in its own teachers. This may evolve into a problem of scheduling and could result in having "too many cooks in the kitchen." The latter problem can be minimized, however, if the institutions maintain the same laboratory aids for both types of classes in order to keep track of equipment and supplies while changing teachers.

Sharing facilities and equipment across institutions often represents the best use of expensive equipment and can save countless dollars. Many of the postsecondary institutions say that these efforts also allow them to enhance their recruitment opportunities.

Contracting to Offer Classes for Other Institutions

Secondary schools in many States contract with a local community college to teach certain classes for them, or vice versa. This is particularly common where class enrollments are small and the secondary school cannot afford to employ qualified faculty in some areas of instruction. Often these classes are in specialized sciences or advanced technologies. Frequently, an entire class is sent to the college; in other situations, only a few high school students are permitted to enroll with the regular college students.

In cases where the high school vocational facilities are superior, college students may be sent to the high school for specific classes in such skill areas as machine shop operation. The study

also found that vocational schools sometimes contract with a private college or proprietary school to teach cosmetology.

Many of these arrangements represent good use of postsecondary faculty in assisting the instruction of secondary students. They also permit vocational high school students to use equipment and specialized laboratories normally available only at a college. Frequently, secondary institutions could not make a program available to students if they did not contract with postsecondary schools for these services.

Colleges also benefit from these arrangements. Some colleges offer special advanced classes during summer sessions for promising high school vocational students. Another approach is for a college to conduct seminars for secondary students at various times throughout the school year in such topics as robotics or advanced computer programming. Through such efforts a college not only enriches the students' high school curriculum, but also improves the likelihood that those students who are exposed to the college environment will attend that college in the future—making such arrangements with secondary schools an effective recruiting device.

At the Trenton (New Jersey) study site, the vocational school and the community college jointly sponsor three adult programs in auto mechanics, refrigeration, and solar energy. Each of the institutions teaches the subjects in which it has expertise. Some students stop their education upon completion of the certificate program; others go on to complete the associate degree. A contractual agreement between these two schools spells out their responsibilities.

Contracts for these kinds of cross-level services are usually written on the basis of the cost per student in attendance. In other situations, the two institutions keep track of the students so enrolled and prepare a "bill" at the end of the year. Inevitably, a few other adjustments are usually necessary to make the arrangement work (e.g., adjustments in students' schedules or course schedules).

In some States, problems with funding and teacher certification hinder such contracting. However, in several States (e.g., Wisconsin and Florida), State law encourages these arrangements.

Combined Enrollments

Another kind of collaboration is to enroll vocational secondary and postsecondary technical students in the same classes. This occurs most often when neither of the institutions has sufficient students to justify offering the course separately. Many such combined enrollment programs take place where colleges utilize high school instructors as adjunct college faculty or where high schools use full-time college faculty at the high school site.

The concept of combined enrollments has merit from both an economic and educational standpoint. It usually enables students to take advantage of the best equipment available and may provide instruction from a better qualified faculty. In many cases, too, the arrangement is the only way schools can make a course or courses available to their students.

Some institutions with these arrangements maintain separate fee structures for their own students; others simply serve all of the students without additional cost, but keep track of enrollees and settle up payments for each institution at the end of the year.

Miami-Dade Community College in Florida has a longstanding agreement to provide combined enrollment programs for advanced high school students in its service area. Miami-Dade also operates a Performing and Visual Arts Center that is highly utilized by both high school and college students, as well as by the general public. Other examples of combined enrollment arrangements occur at the study's Cocoa (Florida) site and at other secondary and postsecondary institutions throughout the Nation.

Enrichment

The enrichment model was originally developed in response to requests from local school districts. Many high schools are required by the State to develop programs for gifted students, and the schools often turn to the community colleges for assistance. The colleges respond with enrichment programs that allow students who have completed most of their high school graduation requirements to attend a college program of their choice during their senior year.

Enrichment programs are generally available on a full-time or part-time basis and operate during the regular academic year as well as during the college's summer term. Credits may be held in escrow for later application toward a program at the college, or in some cases, may be transferred to another institution of higher education.

Students who apply for participation in enrichment programs are usually accelerated high school students who plan eventually to attend a 4-year college. Generally the students must obtain a letter from their high school principal stating that attendance in college classes will not interfere with the students' high school work.

These students may elect to take liberal arts transfer or technology programs at the community college. Sometimes students receive both high school and college credit, earning their high school diploma as well as up to two semesters' credit toward a college degree.

Typical enrichment programs serve only senior (grade 12) high school students. Other programs, such as the one at Brevard Community College (Cocoa, Florida), permit selected 10th-, 11th-, and 12th-grade students to participate. Each year a few outstanding students in the Brevard enrichment program receive their high school diploma and an associate degree at the same time. The State of Florida fully funds the education costs for such students.

In addition to permitting high school students to enroll in regular college classes, some community colleges offer special noncredit seminars, conferences, and workshops in the summer to augment the enrichment program. Sinclair Community College (Dayton, Ohio) sponsors a summer institute for high school students. The college also conducts a writing seminar to assess the writing abilities of high school juniors and to help advance their writing skills. Career days and a summer youth program are offered to expose high school students to the college atmosphere and get them thinking about the future.

Articulation with Four-Year Colleges

The term "2 + 2" is currently used for coordinated secondary-postsecondary programs. However, "2 + 2" has another meaning involving articulation between community colleges and 4-year colleges or universities.

Most community colleges have little difficulty in getting 4-year colleges or universities to accept the credits earned by community college students in a university transfer program, which provides the necessary preparatory coursework for transfer to a higher level. In cooperation with area universities, several community colleges, such as Cuyahoga Community College (Cleveland, Ohio), have developed student guides outlining the specific community college courses necessary to expedite students' transfer to a particular college or academic program. Efforts such as these help greatly in easing the transfer process.

Several States, such as Texas and Florida, have passed legislation to mandate the transferability of credit across education levels. However, there seems to be no way to guarantee the transfer of credit. The responsibility for accepting or rejecting credit transfer still resides with the receiving institutions.

According to Kintzer and Wattenbarger (1985), there has been an apparent decline in recent years in the number of students who attend 2-year institutions with the intention of later transferring to a 4-year college or university. The typical 2-year college student today seems to enroll in an occupational program with little thought about a 4-year degree. This may be the result of more extensive recruitment programs and financial aid packages now available for attending 4-year institutions directly following completion of high school.

Some 2-year colleges have difficulty transferring their technical graduates to 4-year institutions. Many universities will accept transferred credits for general and related courses offered as a part of a technical education program, but they will not accept credits for the technical components of the program. This is particularly true when a 2-year graduate of a technical or business program attempts to transfer credit for courses that are offered by the university as upper division courses.

Evidence suggests that some 4-year colleges and universities are working to ease these articulation problems by developing new degree program titles, such as bachelor of applied science in technology. In many cases, the 2-year and 4-year institutions cooperatively develop a "2 + 2" program wherein the 4-year institution accepts graduates of 2-year technical programs as juniors and builds the last 2 years of the baccalaureate program accordingly. These universities may also accept transfers with little regard for particular courses, much as most graduate schools accept any baccalaureate degree.

An unusual example of articulation has been established to link Portland Community College, the University of Portland, and the Oregon Graduate Center. The agreement provides a fully articulated honors program in electrical engineering and computer science and engineering. In this program, a student completes a 2-year associate degree program at Portland Community College, then takes upper division courses at the University of Portland to receive a bachelor of science degree, and finally completes a master's degree at the Oregon Graduate Center.

Portland's extended articulation program requires that the community college use a very selective admissions process for entry to the program (which grants an associate degree in applied science in engineering). The program currently emphasizes recruitment of talented minorities and women, with a goal of approximately 20 outstanding new students accepted each year. All students admitted to this specific course of study are provided a scholarship, fellowship, internship, or other financial aid. Funds for financial aid are provided by local foundations and by business and industry.

The entire range of articulation experiences between 2-year and 4-year institutions can shed light on current issues of high school and 2-year college curriculum coordination.

"1 + 1" Programs

Although this study focused mainly on articulation between secondary schools and 2-year postsecondary institutions, a number of nonbaccalaureate postsecondary institutions have arrangements among themselves that permit curriculum coordination and easy transfer of students. An interesting example in Ohio involves several smaller postsecondary institutions in sparsely populated areas that have joined together to offer associate degree programs. Several of the colleges deliver the first year of a program and then transfer the competencies to another institution for the second year's work.

This kind of arrangement is particularly appropriate when expensive equipment and scarce technical faculty are needed for the second-year curriculum. Care must be taken in planning the course offerings, however, because not only must students who go on to the second year of the program be prepared for the transfer, but students who stop their education at the end of the first year must also be prepared for employment. An example is a "1 + 1" program that trains respiratory therapy technicians (certificate at end of grade 13) as well as respiratory therapy technologists (associate degree at end of grade 14); another is a program that trains both practical nurses and registered nurses, using a career ladder concept.

Some area vocational centers with strong full-time postsecondary vocational programs (but no authority to award associate degrees) may develop articulated "1 + 1" programs with nearby community colleges. Such programs allow interested students to take 1 year of training at the vocational center in lieu of the first year of a 2-year associate degree program at the college. For example, Bellevue Community College (Bellevue, Washington) cooperates in this way with Lake Washington Vocational Technical Institute, which does not offer the associate degree. Similarly, Hennepin Technical Centers (Minneapolis, Minnesota) are currently negotiating with a local community college for some technical program degree award articulation.

Agreements with Proprietary Schools

Many 2-year colleges have arranged to accept proprietary school completers into the 2-year college programs with some level of advanced placement. Most of these arrangements are made on an individual basis, but project staff found one example of a formal articulation agreement between a public community college and several proprietary schools in the same city.

Cuyahoga Community College (Cleveland, Ohio) recently developed an articulation agreement with seven proprietary schools located in Cuyahoga County. The staff of the community college visited each of the seven proprietary schools to determine the educational levels of their programs. Involved faculty and administrators of the institutions then met (and continue to meet) to work out the details of the proposed agreement. Using a career ladder approach, the community college accepts persons who have completed 1-year diploma programs at the proprietary schools as candidates for the associate of technical study degree program. These students receive 45 quarter credit hours of advanced standing toward completion of the degree. The agreement has been in operation for only 2 years, but several transfer students from the proprietary schools have already completed the additional 45 quarter credit hours and received their associate degrees.

Another interesting aspect of the agreement between Cuyahoga Community College and the proprietary schools is that the college refers students to the proprietary schools for occupational programs that are not currently offered at the college. In these cases, students take all of their laboratory and related courses at a proprietary school and their general education course work at

the community college. The agreement further allows the community college, on a contractual basis, to teach certain courses in developmental education and general education within the proprietary school setting.

Consortium Arrangements

On several occasions, 2-year colleges and sometimes vocational secondary schools have joined together in consortia to offer educational programs. This is particularly useful when the individual schools are too small or the education program does not attract enough students to justify the cost of the program.

A typical example occurs in southeastern Ohio, where 6 small 2-year colleges have joined together to offer an agricultural production program. Each of the six colleges teaches the general and basic education courses on its own campus. Students are sent to a central location for their technical courses, taught by The Ohio State University's Agricultural Technical Institute, largely through agricultural extension agents. The consortium of 2-year colleges pays the university for the delivery of these courses. The courses taught at the central location in the consortium area are the same as those offered at the Agricultural Technical Institute at Wooster. This arrangement ensures the quality of the technical courses, which is important to students who may later decide to pursue a 4-year degree.

Consortium arrangements hold great promise for small schools interested in making sometimes costly specialized educational programs available to their students.

CHAPTER 6

STATE OF THE ART

Studying program coordination between secondary and postsecondary schools is like unraveling a tightly knotted ball of yarn. Different colored strands are discovered, pulled out, and analyzed. Some threads that at first seem unconnected gradually change color and reveal themselves as one continuous piece. After all the separation and analysis, one may ask, "What is really going on out there? What is the big picture of our Nation's current attempts at vocational technical curriculum coordination?" This chapter examines the state of the art in program coordination as the year 1986 begins.

Project Findings

A concise list of project findings is as follows:

- An increasing number of articulation activities involving vocational technical curriculum coordination are reported between secondary and postsecondary institutions.
- The terminology currently in vogue for program coordination is "2 + 2," but this term is often used indiscriminately to describe totally different kinds of programs.
- Most program coordination activities are designed simply to grant advanced standing in postsecondary programs for students who have mastered certain lessons or competencies in high school. The postsecondary program is thus time-shortened, but the skill levels of postsecondary graduates are not advanced.
- Some advanced standing programs involve making coordinated changes in both secondary and postsecondary curricula, but most do not. The difficulties involved in reaching agreements to change curricula can be considerable.
- "Pre-tech" (also called core curriculum or "tech-prep") programs are being developed at some locations chiefly for use at the secondary level to better prepare students for postsecondary programs. As a result, postsecondary graduates will acquire more advanced skills after having a head start.
- A 4-year (grades 11-14) approach with a totally coordinated secondary-postsecondary curriculum results in graduates with more advanced skills than usual, and genuinely deserves the name "2 + 2." It also provides for multiple exit points on a career ladder.
- Many other cooperative arrangements in place do not involve curriculum coordination, but seem to be leading to it, and may eventually evolve into vocational technical "2 + 2" programs.

Another way to present project findings concisely is to provide profiles of the three basic models of secondary-postsecondary curriculum coordination found in this study: advanced placement, pre-tech, and vocational technical "2 + 2."

Advanced Placement (or Time-Shortened) Model

Many curriculum coordination efforts grant postsecondary credit (advanced placement) with or without fee payment for accomplishments at the secondary level, documented in ways such as testing with nationally or locally developed instruments; evidence of high school achievement in advanced courses or in a competency-based program; or informally, based on recommendations made by secondary teachers. Sometimes credit is awarded at once; sometimes only after the successful completion of more advanced postsecondary learning experiences.

Advanced placement programs usually involve little change in the postsecondary curriculum since typically they must serve both students with advanced standing and those without it. As a result, the postsecondary programs do not offer instruction in advanced skills or knowledge to the advanced placement students. Time-shortening is the primary characteristic of advanced placement programs, which are the most common kind of program coordination effort in existence today.

"Pre-tech" or Core Curriculum Model

Some programs do involve revision of the secondary curriculum (grades 11-12) to strengthen applied science, mathematics, and other courses in order to improve students' technical reading, technical writing, and computer skills. The resulting curriculum is less theoretical and more applied than the traditional college preparatory curriculum, yet it provides fewer job-ready skills than the traditional vocational curriculum.

Some postsecondary schools have cooperated with secondary schools in developing pretechnical sequences that prepare high school graduates for difficult occupational programs. The subsequent articulated postsecondary occupational programs can then produce graduates with more advanced skills, since students begin grade 13 at a higher level of competence. These programs also provide job entry-level skills at the conclusion of grade 12, as well as strong entry into postsecondary education.

The Center for Occupational Research and Development (CORD), in cooperation with the American Association of Community and Junior Colleges (AACJC), has developed a guidebook (Center for Occupational Research and Development 1985) for those interested in such programs (which they call "tech-prep/associate degree programs"). CORD has been an active leader in developing pre-tech (they call it "tech-prep") curricula. Dale Parnell (1985), president of the AACJC, has recently published a book, *The Neglected Majority*, in which he encourages the development of tech-prep/associate degree programs nationwide.

Vocational Technical "2 + 2" Model

A few programs develop integrated curricula for grades 11-14, avoiding duplication of learning and providing competency-based exit points after grades 12, 13, and 14 in career ladder fashion. Such programs are truly both vocational and technical. Typically, faculty members, administrators,

and employers have met to plan the curriculum and to agree on what will be taught at what level. The resulting spirit of cooperation can lead to sharing facilities, faculty, counselors, and other program elements. (Figure 2 visually depicts this discussion of secondary-postsecondary curriculum coordination.)

Past and Current Trends

The history of secondary-postsecondary program coordination in vocational technical education is intertwined with that of articulation, a slightly broader concept. Interest in articulation seems to rise and fall over the years. It increases when enrollments decline, when policymakers mandate cooperation, and when new instructional approaches (such as competency-based education) make coordination easier. Some institutions with both secondary and postsecondary missions routinely coordinate their vocational technical programs. Articulation tends to decrease when funding is not available to support the staff involved in linkage or to develop the necessary competency-based curricula. Articulation also wanes when enrollments increase and when institutions deliberately seek to enhance their academic prestige. In the former case, there is an abundance of customers for education and special attractions need not be offered. In the latter case, administrators may believe that a prestigious institution "gives away nothing" and makes admission difficult.

At times, 2-year colleges have been inconsistent in their approach to articulation. Some have pursued articulation with senior colleges and universities, yet have not fostered it with secondary schools. For others, the passage of time simply seems to have eroded their efforts at articulation, especially when the institution viewed it as an experiment rather than as a normal part of the system. As a result of all such circumstances, interest in secondary-postsecondary articulation has ebbed and flowed over the years.

Today, interest in articulation is running high. The AACJC, led by President Dale Parnell, has called for 1,000 roundtable discussions to be held around the Nation involving high school and 2-year college people to discuss cooperation and articulation. In his book *The Neglected Majority*, Parnell (1985) says, "It is time to build a more effective partnership between secondary schools and community, technical, and junior colleges" (p. 111). If the number of program coordination efforts discovered by this project is any indication, a good many secondary and postsecondary schools have already gotten the message. Articulation (frequently called "2 + 2") is of great interest at the present time, especially to secondary vocational schools and 2-year colleges.

Future Projections

Parnell (1985), in a convincing assessment of the evolving employment and training scene, points out,

> The complex, technological world of the future is already here. The emerging truth is that higher and more comprehensive skills must be developed, particularly by the middle two quartiles of the work force. Tasks once reserved for baccalaureate-degree or advanced-degree holders must be assumed by those with fewer years of education and training, and all workers must continue to learn throughout their careers to remain useful. Technology, as it becomes more commercial, will increase America's need for middle-range proficiencies. (p. xii)

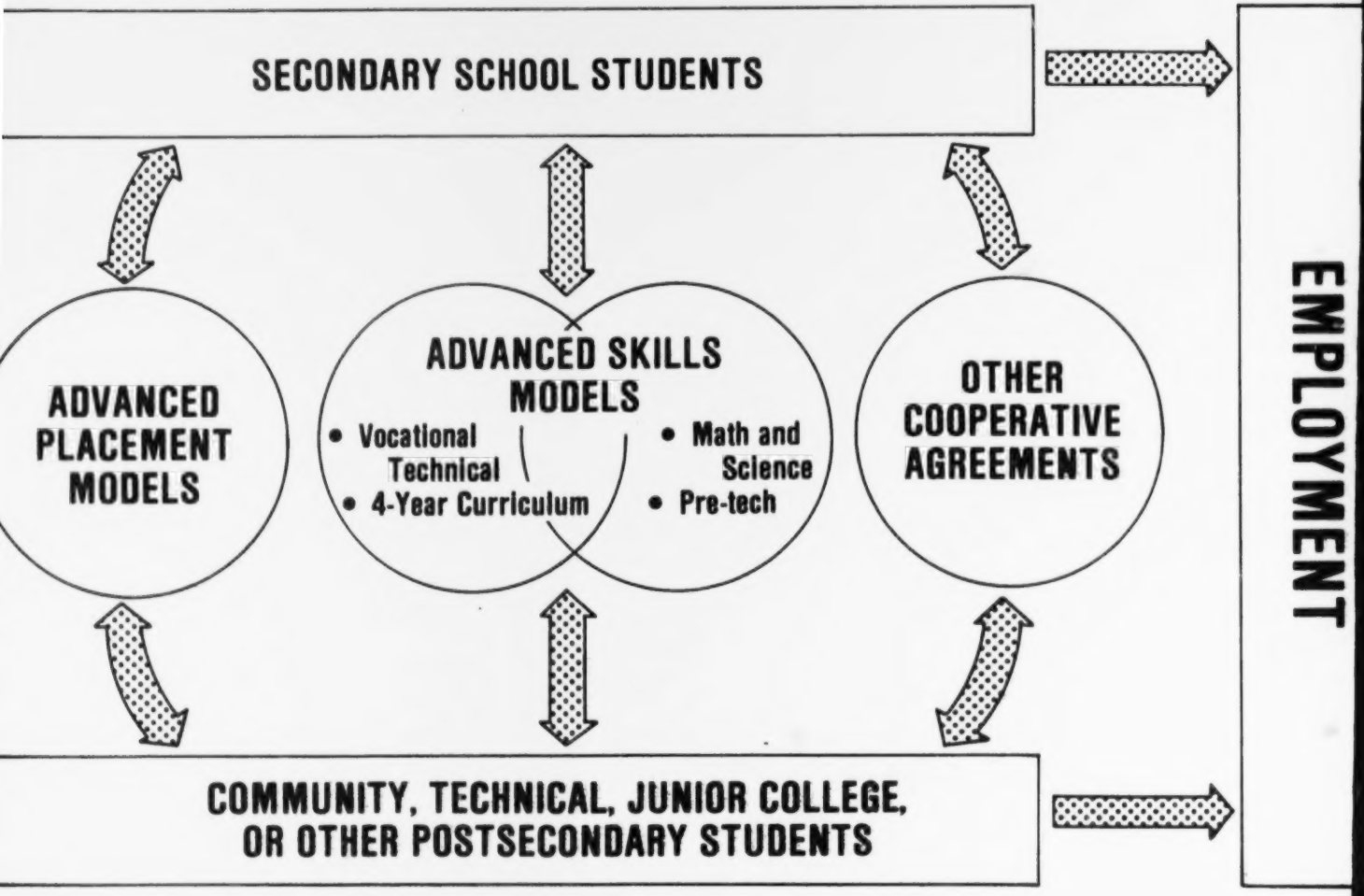

Figure 2. Secondary-postsecondary curriculum coordination

In effect, Parnell and the AACJC—as well as CORD and other organizations—support the further development and dissemination of the advanced skills model of program coordination, as exemplified either by the articulated tech-prep/associate degree effort or the vocational technical "2 + 2" approach. Well-trained workers for technical jobs will be a major future need, and technicians will have to learn more (within the same amount of time) than they ever had to learn before in order to meet changing and expanding job requirements.

Yet not every school—secondary or postsecondary—will be willing or able to devote the kinds of resources and time needed to develop a comprehensive advanced skills program. Pressure for schools to articulate is likely to increase, but most will probably pursue some version of the less demanding time-shortened model. Even though this will not provide graduates with more complex skills and knowledge than taught normally, such efforts will save students time and tuition money and will help develop effective working partnerships across educational levels.

Awareness of the benefits of advanced skills programs can be expected to grow, however, boosted by accumulating successes at sites with these programs. Such successes should encourage institutions that initially adopt time-shortened approaches to extend their efforts to more ambitious advanced skills programs. But for the immediate future, most schools will probably approach articulation conservatively, adopting aspects or variations of the less costly time-shortened models and watching the handful of current advanced skills programs (e.g., Bakersfield, California; Oklahoma City, Oklahoma) to see how those evolve.

As more and more secondary and postsecondary institutions commit themselves to some type of program coordination for occupational training, the following trends may be expected:

- **Program coordination will prove its worth to secondary vocational education.** Local secondary vocational education institutions struggling with shortages of students and resources can be expected to embrace articulation wholeheartedly. By featuring a postsecondary connection, these schools have a basis for attracting more students into programs that offer technical preparation and job-entry level skills simultaneously.

- **Program coordination will help secondary vocational education meet current and continuing demands for excellence.** Because competency-based education facilitates articulation, some schools will revise or rewrite their coordinated curricula along those lines. Articulated programs will also provide, in many cases, more advanced courses resulting in more advanced and skilled program graduates—the "product" of vocational education. Finally, effective program coordination should result in more program completers and more placements in postsecondary education after graduation.

- **Program coordination will help postsecondary vocational technical education institutions increase enrollments and advance program excellence.** Articulation with high schools will bring in more and better prepared students to the 2-year colleges.

- **Secondary-postsecondary program coordination will extend to even more articulation with higher education.** "2 + 2 + 2" is the logical progression. Students will be able to start on their occupational training in high school, articulate to 2-year postsecondary institutions for more advanced training, and may then choose to move on to a 4-year college or university to pursue a related baccalaureate degree.

- **Coordinated occupational training programs will attract more and better quality students** to vocational technical education than will traditional programs, as more students

become aware of the advantages: broadened training opportunities, savings in time and money via the elimination of duplication of training, more built-in career ladders, better training programs, and the realization that such programs can make high school vocational students feel more like college-bound students.

- **Local employers and citizens will encourage and support local schools to articulate.** Some of the major advantages of program coordination accrue to employers: program coordination produces better technical workers, in many cases faster than traditional programs; it attracts more and better quality students than do traditional programs; and it encourages local students to stay and get their training locally, rather than going elsewhere for training and finding employment in another community.

Promising Directions for Local Coordination

As frequently happens with an idea whose time has come, examples of new attempts at coordination are being reported all over the Nation. Most are the result of local initiative. To get a local program started, however, someone must make the first move. Employers can become the instigators and may act as potent supporters in getting the program up and running. Often, leadership comes from the local postsecondary institution, but this study found a number of programs in which the stimulus and leadership for planning came from the K-12 or secondary school district.

Turfism is a problem for many local coordination programs, yet people are finding sensible and even innovative ways to build strong working partnerships, despite past episodes of divisive turfism. Mutual ownership of an articulation effort is the key. All partners must be equal. All must collaborate from the beginning on the plan. All must share responsibility for making it work. And all must benefit from its outcomes. As noted by Long (1985), a "win-win" mentality is essential to effective local initiatives in articulation.

Once undertaken, curriculum coordination needs local support to maintain its momentum. Some efforts have been able to tap the broad resources of their community necessary to launch highly ambitious advanced skills programs, such as those at Oklahoma City and Bakersfield. These kinds of programs, which involve complex arrangements and extensive curriculum development and/or upgrading, demand strong support from the community and local employers.

Time-shortened programs take many forms and are probably easier to plan and operate, though they too can demand the commitment of considerable resources. A few, however, such as Hennepin Technical Centers (Minneapolis) and the time-shortened program at Sidney, Michigan, have found unique ways to deal with the costs of their programs.

Promising Directions for Statewide Coordination

Increasingly, State plans or policy statements seem to encourage or even mandate secondary-postsecondary articulation of occupational training. A number of States support program coordination efforts via some kind of funding, usually in the form of planning grants.

Directly or indirectly, some States endorse program coordination by allowing or mandating practices that have strong impact on occupational program articulation. For example, the State of Florida permits dual enrollment of high school and postsecondary students in occupational training programs, and secondary students may earn credit both for high school graduation and college credit at the same time. Florida even funds such enrollments at the 1.3 FTE student level to

encourage articulation. In many cases, high school students make significant progress toward earning an associate degree by the time they graduate from high school.

A number of States, such as South Carolina, have mandated that occupational training be competency-based, and some have provided support for schools to revise curricula accordingly. The Greenville (South Carolina) study site took advantage of this to plan and implement its articulation effort, in which competency-based training is pivotal.

California's State plan endorses program coordination but does not support it directly. It does encourage articulation by maintaining flexibility in many of its relevant policies. For example, at Sacramento, the State has permitted high school students in the program to bypass the physical education requirement in order to make time in the daily schedule for travel to articulated classes.

Several States, such as Wisconsin, Florida, and Illinois, have passed legislation or developed regulations that mandate or encourage program coordination. Much more could be done at the State level, if articulation were not so often at the juncture between two different State agencies.

As things stand now in most States, the State legislatures will have to intervene before significant articulation leadership will arise at the State level. One scenario calls for a direct legislative mandate requiring secondary-postsecondary program coordination; another calls for the executive branch of State government to realign State agency or State board responsibilities to permit articulation to blossom.

For many reasons, however, such changes will not be made easily. One reason is that many 2-year postsecondary institutions fear that an agency realignment would strengthen their linkage to secondary schools but weaken their linkage to 4-year colleges and universities. At the present time, no universally agreed upon "solution" exists to the problem of how best to establish State-level support and encouragement of secondary-postsecondary vocational technical curriculum coordination.

Conclusions

Secondary-postsecondary program articulation has been around for decades, but today it is entering a strong new developmental cycle, driven by a renewed sense of service to students and community, the demand for educational excellence, the spread of new technology into most technical occupations, and the need to get the most out of shrinking finances at a time of declining enrollments. Those who plan and operate occupational training coordination efforts unanimously recommend it as a valuable, viable system whose benefits greatly outweigh its costs of money and staff time.

Coordination between secondary and postsecondary occupational programs occurs most successfully where (1) local training institutions have already established good working relationships, (2) the State endorses articulation and provides planning grants or other support without tacking on too many restrictions, and (3) all partners consider each other their equal. Successful programs have other common elements that are essential to effective planning and operation. They are as follows:

- Leadership and commitment from the top
- Early faculty involvement

- Relationships based on mutual respect and trust
- Mutual benefits to all partners
- Written articulation agreements
- Open, clear, and frequent communications
- Modest initial goals
- Clearly defined responsibilities
- Competency-based curricula
- Common focus on mutual goals rather than individual turf

State governments and agencies are becoming aware of the benefits of articulated secondary-postsecondary programs, and a number of them now endorse or even mandate it. This trend seems likely to continue, blocked only in those States where political rivalry among State agencies discourages cooperation across educational levels. Fortunately, State support for articulation is not necessary for a successful coordinated program. Many effective programs exist that begin locally and depend strictly on local support and ingenuity.

The study found that such internal problems as turf conflicts, faculty resistance, poor communications, and incompatible curricula are more likely to hamstring an articulation effort than are external problems, such as with State agencies. Most sites resolve their problems through thoughtful planning and negotiation before they get out of hand. In many cases, an examination of the literature on articulation or previous experience with other collaborative efforts forewarn program planners, who then devise ways to avoid many of these problems entirely.

In the 1980s, "2 + 2" means not "4," but "articulation."

APPENDIX A

LIST OF TECHNICAL PANEL MEMBERS

TECHNICAL PANEL MEMBERS

Dr. Gail H. Henderson
Vocational Supervisor
Ohio Department of Education
65 South Front Street
Columbus, OH 43215

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President
Center for Occupational Research and Development
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Waco, TX 76710

Dr. Dale Parnell
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American Association of Community and Junior Colleges
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Washington, DC 20236

Dr. Robert P. Sorensen
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Wisconsin Board of Vocational, Technical and Adult Education
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P.O. Box 7874
Madison, WI 53707

Dr. John Washburn
Manager
Research and Development Section
Illinois State Board of Education
100 North First Street
Springfield, IL 62777

APPENDIX B

INTERVIEW PROTOCOL SAMPLE

INTERVIEW PROTOCOL SAMPLE

Interviewee Name: _____
Title: _____
Organization: _____
Address: _____
Phone: _____
Date: _____ Interviewer: _____

. . . . . .

Priority Questions

I. Is the articulation effort achieving what you want it to? Why or why not?

II. What barriers or problems have you run into?

III. What does it take to really make secondary-postsecondary vocational technical articulation work?

IV. What have been the benefits of articulation?

V. What have been the costs?

VI. Have the benefits exceeded the costs?

VII. What would you change or improve?

VIII. What advice would you give to others who wish to establish an articulation system in their area?

Specific Information Questions

Articulation Program

1. What was the purpose or impetus for establishing the articulation arrangement?

2. When did the planning begin (date)?

3. Who initiated it?

4. Is there a joint program advisory committee? What is its composition? How is it working?

5. What schools are involved in the articulated arrangement?

6. Is there a written articulation agreement? (get copy)

7. Date program(s) actually went into operation?

8. What are your formal joint planning/operating structures now? What levels within the organizations are involved in articulation?

9. Does the program share facilities, equipment, services? Are these shared by formal contract or other agreements?

10. Does the program share staff? If so, is credentialing of college-level instructors a problem? Why or why not?

11. What is the extent of faculty involvement at both levels?

12. How do faculty feel about the program? Any problems?

13. Has there been employer involvement in establishing and operating the articulated program?

14. How many students are involved in the program(s)? How many have completed the program(s)? What is the dropout rate?

15. Who ensures high school competencies for articulation (college or school)?

16. Does the program provide coordinated assessment and counseling services?

17. What is your evaluation/revision system for the program(s)?

18. What are your funding sources for the program(s)? Has funding been a problem?

State Involvement

19. What is your State system governance structure for secondary and postsecondary schools? Is voc-ed separate?

20. Has the State educational governance system facilitated or hindered your articulation program(s)? How?

21. Is there State legislation that affects your articulation effort? What about a State plan?

22. What incentives or disincentives for articulation come from the State?

Program Curricula

23. What specific vocational/technical curricula are articulated? (Get curricula outlines.)

24. How would you describe these coordinated programs? (Get descriptive material.)

25. Are your programs competency-based?

26. Are your programs individualized and/or open-entry/open-exit?

27. Do your programs create a career ladder with certificate, diplomas, and degrees?

28. Is the foundational academic part of the curriculum also articulated? Is there a core curriculum?

29. Do your programs involve advanced placement by testing or advanced placement by course equivalency credit? How is this determined?

30. Is your program a true "2 + 2" curriculum involving 4 years of sequential work?

31. Do high school students get the English, math, science, and computer courses they need to succeed in postsecondary technical courses? Would further articulation help this?

Community Information

32. Is your service area predominately rural, urban, suburban? What is its population?

33. What are the major local industries and businesses?

34. What is the condition of the local economy and what is the employment picture?

Materials to Collect

1. College or school catalog
2. Written articulation agreement(s)
3. Contracts for sharing facilities or staff
4. Information about the community (demographic, economic, employment, and so forth)
5. Organization charts: (a) state education structure and (b) articulated arrangements
6. State documents impacting on articulation (legislation, State Plan, and so forth)
7. Description of articulation program
8. Outlines of articulated curricula

Institutional Information

1. Number of campuses or high schools?

2. Number of students (head count or FTE)?

3. Number of students in articulated program?

Unique Features and Significant Factors

-
-
-

APPENDIX C

SAMPLE ARTICULATION AGREEMENTS

SAMPLE STATE AGREEMENT

In keeping with the policies, philosophy, and goals of the Office of Vocational Education, State Department of Education, and the State Board of Technical and Comprehensive Education, we, the undersigned, pledge our commitment to, and support for, curriculum program articulation and cooperation between the vocational programs in the high schools, vocational centers of the State's school districts, and compatible curricula in the technical colleges in (South Carolina) .

The appropriate state-level staff will work in a coordinating role through the School District Superintendents and Vocational Directors, Technical College Presidents, and staff to accomplish the purpose and intent of this Agreement. The benefits of the Agreement will be to ensure smooth transition of vocational students who wish to continue their education in a technical college compatible program. The student will receive advanced standing into TEC, based on a local agreement between vocational and technical program officials.

The benefit of this is to remove any artificial barriers to the smooth transition of the student's educational process. It will also reduce any unnecessary duplication of cost and instruction required of a student to reach an educational goal.

We, the undersigned, pledge our best efforts and commitments to this Agreement on

_____.
(date)

_____
State Board for Technical and
Comprehensive Education

_____
Office of Vocational Education
State Department of Education

SAMPLE INSTITUTIONAL CONTRACT

_____ COMMUNITY COLLEGE
_____ SCHOOL DISTRICT

Statement of Intent

The purpose of this articulation agreement is to provide a mechanism that will enable vocational-occupational students from _____ High School to transfer to _____ Community College and receive credit for courses taken at the secondary school in order that they need not repeat skills already learned.

Participating Institutions

We, the undersigned representatives of the listed institutions, agree in principle to this concept and will charge our administration with developing program articulation agreements that will be executed by the Superintendent of Schools and the College President.

Cost

There will be no charge for college credit awarded through this agreement, but the Community College may charge a small fee for the administration of the student's record.

The Community College and the Public School District will each fund one-half the cost of a coordinator for a 3-year period to a maximum of $_____ per year.

Advisory Committee

The President and the Superintendent shall jointly appoint an Articulation Advisory Committee of approximately 10 people representing the 2 institutions, and/or a committee to offer advice as the various program agreements are developed.

_____	_____
Chairman, Board of Trustees _____ Community College	President, Board of Education _____ Public School System

SAMPLE PROGRAM ARTICULATION AGREEMENT

_____ COMMUNITY COLLEGE
_____ SECONDARY SCHOOL

Based upon the mutual concern for the needs of students pursuing the _____ occupational program and in an effort to provide a continuing articulated program that builds on past learning experience and eliminates unnecessary duplication of instruction, the following are agreements to which we mutually subscribe:

1. Students who have fulfilled the learning outcome objectives within the College's identified speciality area based on _____ High School's secondary level of courses in the _____ occupational program, and who are recommended as being competent in this subject matter, will be recognized for _____ credits at _____ Community College.

Secondary Course Certified	**Postsecondary Course Articulated**
_____	_____
(Name of course)	(Name of course & credit hours)

2. Applicants for credit must meet all College admission requirements, be an enrolled/registered student in good standing with the College, and must have successfully completed with a grade of C or better the next higher sequential course within the _____ program before credit, held in escrow for the secondary work, is awarded.

3. Should a student intending to receive credit under this agreement fail to make satisfactory progress in the intermediate course, the student may be required to transfer back to the beginning level course at the discretion of the College faculty.

_____	_____
Superintendent	President
_____ School Board	_____ Community College

SAMPLE ARTICULATION AGREEMENT

This agreement is made between _____ Community College and _____ Public Schools.

We hereby agree to the following:

1. Participating instructors at the secondary and postsecondary levels will formally adopt and teach from a list of competencies (task list) based on job task requirements. Criteria for evaluation and recording levels of competency will also be formally adopted.

2. Designated representatives from each institution will attend a meeting scheduled prior to the beginning of each academic year to review each occupational area and amend, as necessary, the occupational task lists, evaluation system, recording forms, objective-referenced tests, and criterion-referenced measures used to establish the levels of competency.

3. _____ Public Schools will maintain for each student a competency record that identifies subject areas and levels of task achievement. This record will become a part of the student's official record and will be provided upon request of the student to the _____ Community College.

4. _____ Community College will provide to _____ Public Schools on an annual basis a list of current courses for which advanced standing credit may be requested.

5. _____ Community College will evaluate the student's records received from _____ Public Schools and award advanced standing credit when appropriate, according to the State higher education guidelines.

6. All participating faculty and administrators, full-time and part-time, will have training in competency-based education and will receive orientation on the articulation process described herein.

7. This agreement will be renewed on an annual basis by the President of _____ Community College and the Superintendent of _____ Public Schools, or their designees.

_____	_____
President	Superintendent
_____ Community College	_____ Public Schools
_____	_____
(date)	(date)

APPENDIX D

SAMPLE CURRICULA

SAMPLE VOCATIONAL TECHNICAL 2 + 2 CURRICULUM

Mechanized Agriculture

GRADE 11 (FALL)

American History
English
Mathematics
Physical Science or Chemistry
Intro. to Ag. (3)

GRADE 11 (SPRING)

American History
English
Mathematics
Physical Science or Chemistry
Intro. to Ag. Mech. (3)
Equip. Ser. & Opr. (3)

High school certificate of competency in service and operation

GRADE 12 (FALL)

American Government
English
Modern Language
P.E. or Elective Tech. Math (3)
Farm Power (3)

GRADE 12 (SPRING)

American Government
English
Modern Language
P.E. or Elective Tech. Math (3)
Farm Engines (3)

High school diploma and/or certificate of competency in entry level farm mechanics

GRADE 13 (FALL)

English-Composition (3)
Humanities (3)
Fluid Pneu. Power (3)
Arc Welding (3)
Basic Auto (3)
Elective (3)

GRADE 13 (SPRING)

English-Speech (3)
Farm Fabrication (3)
Elem. Machine Shop (3)
Elective (3)
Elective (3)

College certificate of competency in fabrication and repair

GRADE 14 (FALL)

English-Tech Writing (3)
Behavorial Science (3)
Physical Fitness (1)
Farm Tractors (3)
Elective (3)
Elective (3)

GRADE 14 (SPRING)

Humanities (3)
Fine Arts (3)
Physical Fitness (1)
Farm Small Engines (3)
Elective (3)

College associate of applied science degree in mechanized agriculture

Suggested College Electives

Agriculture Business Management
Agriculture Computers
Introduction to Animal Science
Principles of Crop Production
Trees & Vines
Soils
Irrigation
Entomology
Plant Identification
Automobile Engines Machinery
Advanced Machine Shop
Basic Hydraulic Fluid Mechanical
Oxy/Acetylene Welding
TIG and MIG Welding

( ) indicates college credits

SAMPLE PRE-TECH 2 + 2 CURRICULUM

Biomedical Equipment Technology

A. HIGH SCHOOL COMPONENT

Grades 9 and 10 would include a year of "Careers in High Tech" and a semester each of "Computer Literacy" and "Graphics."

11th Grade

1st Semester	**2nd Semester**
English	English
Algebra II	Algebra II
*Physics I	*Physics I
*Fundamentals of Electricity/ Electronics	*Fundamentals of Electricity/ Electronics
U.S. History	U.S. History
Elective	Elective

12th Grade

1st Semester	**2nd Semester**
English	English
*Physics II	Physics II
*Analog Devices	*Analog Devices
*Fluid Power	*Mechanical Devices
Trigonometry	Trigonometry
Elective	Elective

*Indicates Pretech Courses

B. COMMUNITY COLLEGE COMPONENT

Required for All Majors	**Biomedical Equipment Technology Majors**
Analytical Geometry	Circuit Analysis
Pre-Calculus	Heating & Cooling
Technical Communications	Industrial Elect. Power & Equipment
Economics	Chemical Analyzers I
Industrial Relations	Chemical Analyzers II
American Fed. Government	Gas Flow detection/analyzers
American History	Diagnostic Recording Instrumentation
Properties of Materials	Life Support Systems
Computer Applications	X-Ray & Nuclear Equipment
Instrumentation & Control	Ancillary Equipment
Digital Fundamentals	

SAMPLE ADVANCED PLACEMENT 2 + 2 CURRICULUM

Community College Engineering Technologies Division

The Engineering Technology Division recognizes the advanced status of vocational education students when they extend their training into college curriculum. The college will therefore permit advanced placement and grant credit to any student who has successfully completed related high school vocational training within the public school system.

Public Schools Program	College Program	Credit Grants
Machine Trades Drafting-Design Trades	Ind. Mfg. Technology Ind. Eng. Technology Mech. Eng. Technology Pkg. Eng. Technology Qual. Ctrl. Technology	QCT - 111 INT - 111 DRT - 101
Electronics Trades	Electrical & Electronics Repair Technology	EER - 111 EER - 116 EER - 141
Automotive Trades	Automotive Technology	Dependent upon result attained on the automotive mechanics achievement test

APPENDIX E

GLOSSARY

GLOSSARY

Advanced Placement—Any arrangement that enables secondary students to receive credit for and bypass courses in a postsecondary program.

Advanced Skill Program—An articulation program that streamlines occupational program fundamentals in order to make room in the 2-year postsecondary curricula to teach more advanced technical skills than students would normally get in a traditional (or even time-shortened) program.

Articulated Curricula—Secondary and/or postsecondary courses of study that have been (re)structured so as to avoid duplication of learning components and smooth transition from one level to the next.

Articulation—As used in the context of this guidebook, a planned process linking 2 or more educational systems to help students make a smooth transition from the secondary level of occupational training programs to the 2-year postsecondary level without experiencing delays or duplication of learning.

Competency—An activity (cluster of skills and knowledge) that a person performs in an occupation that is both observable and measurable and that forms the basis for competency-based curricula.

Competency-based Curriculum—An educational program designed to teach clusters of skills and knowledge ("competencies") a person performs in an occupation, mastery of which forms the basis upon which the student is evaluated and graded.

Core Curriculum Program—As used in the context of this guidebook, a secondary pre-tech or "tech-prep" program that delivers a broad basic background in technology in order to produce better prepared high school graduates for entry in postsecondary technical training programs.

Curriculum (Occupational)—A specific set of education courses or competencies designed to teach entry-level occupation-based skills and knowledge.

Horizontal Articulation—When students move from one school or program to another of the same type and at the same level.

Individualized Instruction—The process of custom-tailoring instruction so that it fits the learning style of a particular student; individualized instruction is based on the premise that there is no one best way for all students to learn.

Open-entry/Open-exit—A program, usually individualized, in which students may enter at several (sometimes many) points in the school year and curriculum, and may proceed to an exit point often of their choosing and at their own pace.

Postsecondary Institution—In the context of this guidebook, a community college, junior college, technical institute, or area vocational-technical center that delivers occupational training primarily for grades 13-14.

Pre-tech—See Core Curriculum Program.

Released Time—Time taken from an instructor's normal student contact assignments for other work (e.g., writing curricula) during which a substitute teacher replaces the released instructor.

Reverse Articulation—When students enrolled in an institution normally considered to be at an advanced level return to an institution of education from which they usually would be expected to have graduated earlier.

Secondary Institution—In the context of this guidebook, a high school or vocational school that delivers education/training primarily for grades 10-12.

Tech-prep Program—See Core Curriculum Program.

Time-shortened Program—An articulation program that facilitates advanced standing in postsecondary occupational programs and allows students to complete the postsecondary training faster, but without advancing their skill levels beyond those of a traditional program.

Turfism—A defensive stance to protect what one perceives as one's private "turf" or territory (e.g., secondary versus postsecondary "turf" relating to primary ownership of programs or students).

"2 + 2"—Articulation of vocational technical curricula in grades 11-14, with career exits after grades 12, 13, and 14, to create a strong 4-year curriculum that produces graduates with advanced skills. (Also see Advanced Skill Program.)

Vertical Articulation—Any linking of two or more educational programs or systems to help students move smoothly from one level of instruction to the next one without experiencing delays or loss of credit.

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